

THE SIGHT-SAVING REVIEW

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Table of Contents

	PAGE
THE 1957 CONFERENCE IN NEW YORK.....	68
<i>Photos by courtesy of J. P. Goeller</i>	
AWARD OF THE LESLIE DANA MEDAL.....	76
COMMUNITY-WIDE GLAUCOMA CASE FINDING	
Audrey Hayden Gradle and Burnetta Downing.....	78
OPTICAL AIDS SERVICE OF THE INDUSTRIAL HOME FOR THE BLIND	
Leo Esbin, M.D.....	83
PRESCHOOL VISION SCREENING	
Florence Cunningham, R.N.....	90
RESULTS OF A VISION SURVEY	
Thomas S. Edwards, M.D.....	96
CAUSES OF BLINDNESS IN CALIFORNIA	
Nedra B. Belloc, M.A., Dorothy H. Fowler, B.A.	
and William D. Simmons, M.P.H.....	98
REVISION OF THE STANDARD CLASSIFICATION	
OF THE CAUSES OF BLINDNESS.....	112
NOTES AND COMMENT.....	116
AROUND THE WORLD.....	120
CURRENT ARTICLES.....	122
BOOKS AND PAMPHLETS.....	132

ADVERTISEMENTS

AMERICAN OPTICAL COMPANY.....	65
EXCERPTA MEDICA FOUNDATION.....	66

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THE 1957 CONFERENCE IN NEW YORK

Cordial and fruitful relationships are renewed at the joint meeting of the Pan American Association of Ophthalmology and the National Society, held April 7-10, at the Hotel Statler.

THE joint conference of the National Society for the Prevention of Blindness and the Pan American Association of Ophthalmology, held in New York City April 7-10, was an occasion of unusual interest for the delegates who gathered in the Hotel Statler from all parts of the United States and many Latin American countries. More than 1,000 eye specialists, nurses, social workers, educators and volunteers heard progress reports on the fight against blindness in the Western Hemisphere. Advances in ocular surgery, developments in eye research, children's vision problems and community organization for eye health and safety were among the subjects discussed.

Greeting from Mayor Wagner

The opening session was the Pan American Association luncheon held Sunday, April 7, in the Statler's Skytop. Dr. Brittain F. Payne, Association president, introduced the Honorable Robert F. Wagner, Mayor of New York, who gave an address of welcome. Mayor Wagner expressed particular pleasure over the opportunity of meeting the distinguished ophthalmologists who had journeyed many thousands of miles from one or another of our sister republics to attend the meeting.

"We are grateful," he said, "for this chance to share not only the valuable

messages of science but to enjoy the equally significant personal friendships which form the firmest basis for true and lasting international understanding. In New York City we are proud of our record of successful scientific endeavor. Here in the medical capital of the world are six of the leading medical schools, numerous research institutions and a host of highly skilled medical scientists working in our departments of health and hospitals. In the field of ophthalmology we claim what I believe is the oldest eye hospital in the United States—our New York Eye and Ear Infirmary which was established in 1820. More than 25 hospitals in this city are approved for residency training in ophthalmology and more than 110 physicians are currently receiving their postgraduate training here in diseases of the eye."

"Great as the progress has been in the prevention and care of eye disease during the past 50 years," Mayor Wagner continued, "it can be even greater. It has been said that those who are optimistic about the results of medical research are proved wrong only because they are later shown to have been not optimistic enough. Certainly the discovery of the cause and the method of prevention of retrolental fibroplasia among premature infants, the elimination of gonorrheal eye infections among newborn babies, the development of the brilliant opera-



"Doctors as Diplomats" was the subject of Dr. Howard A. Rusk's address at the conference dinner. Seated, left to right, Adolf A. Berle, Jr., former assistant secretary of state; Dr. Brittain F. Payne, president, Pan American Association of Ophthalmology; and NSPB president Mason H. Bigelow.

tions for cataract, glaucoma and corneal transplants have astounded any layman who reads his daily newspaper."

"We in New York City," Mayor Wagner said, "have several times in the past seen locally-performed research translated rapidly into essential health services for our citizens. We were among the first in the United States to develop a potent diphtheria antitoxin and first in the world to use penicillin for the treatment of venereal disease. We again held the center of the world's scientific stage several years ago when the isoniazid drugs were developed here for the treatment of tuberculosis, and thousands of our ill citizens were given the immediate benefit of their miraculous healing powers. We have great need for more of these new tools which can be supplied only by research, and our departments of health and hospitals are

planning a major expansion in our medical research facilities. Our city pays an amount approaching one million dollars per year for the hospital care of indigent patients suffering from diseases of the eye, in addition to the more than 10 millions required for the care of our 14,000 citizens who are blind."

Fruitful Relationships

Mason H. Bigelow, president of the National Society, and Dr. Moacyr E. Alvaro of Sao Paulo, Brazil, who is executive director of the Pan American Association, also extended greetings to the conference members, emphasizing the cordial and fruitful relationships that have been maintained by the two organizations for many years. A message from Helen Keller was read (see page 75).

Other speakers at the luncheon were Dr. Frank B. Berry, assistant secre-

tary of defense for medical affairs, and Major General Dan C. Ogle, surgeon general, U. S. Air Force. Dr. Berry spoke of the opportunities for research by physicians in the military services and for extending the latest developments in many countries that receive our military assistance. An international note was also sounded by General Ogle. Conferences like this, he said, are making it "less necessary for the afflicted to make pilgrimages to isolated areas of clinical capability. Professional competence and available professional care are being dispersed to the peoples of the world by the international language and brotherhood of medicine." The Air Force, he added, is "aware of the need of more substantial platforms of medical understanding for all peoples. In medicine we have a universal medium of communication, and whenever and wherever physicians get together for the exchange of their knowledge and observations we have a wholesome atmosphere of understanding."

Award of Dana Medal

The annual award of the Leslie Dana Medal for outstanding service in the field of sight conservation was made at the conference luncheon. This year two pioneers were honored: Mrs. Eleanor Brown Merrill of Baltimore, retired executive director of the National Society; and Miss Evelyn M. Carpenter of Monkton, Md., retired executive director of the Philadelphia Committee for Prevention of Blindness (see pages 76, 77).

Pan American Sessions

The scientific program of the Pan American Association included three symposia on official themes: diseases

of the ocular fundus; ophthalmic surgery; and therapeutics in present-day ophthalmology. The moderators of these sessions were, respectively, Dr. George N. Wise of New York; Dr. John H. Dunnington of New York; and Dr. Irving H. Leopold of Philadelphia. Many free papers and films were presented.

Dr. Peter H. Ballen of New York discussed reconstructive and therapeutic surgery for severe eye burns. Such damage to the eye, he reported, frequently results in perforation when a strictly medical approach is used. An operation that has been employed successfully involves transplanting to the conjunctiva thin buccal mucous membrane, preferably from the lower lip. If this operation is done early it may prevent symblepharon and save the cornea for keratoplasty at a future date, thus saving a useful eye. Dr. Ballen reported that further laboratory investigation of this technique is being instituted at the State University of New York, Downstate Medical Center.

Dr. Isadore Givner of New York dealt with therapeutic aspects of preventive ophthalmology. He emphasized that the internist should be taught to keep glaucoma in mind and rule it out wherever possible. Belladonna and its alkaloids should not be given systemically before inquiring into the family history of glaucoma, and questioning about visual disturbances before instilling mydriatics for fundus study should be routine. Ophthalmologists should perform routine tonometry on all patients over the age of 30 unless the eye is definitely soft to digital palpation. Once a diagnosis is established the patient should be instructed on the necessity of being



At the session on glaucoma detection programs, left to right: Dr. Arnold B. Kurlander, chief, chronic disease program, U. S. Public Health Service; Dr. Willis S. Knighton, chairman, NSPB committee on glaucoma; and Dr. Franklin M. Foote, NSPB executive director.

examined at regular intervals. Dr. Givner stated that inadvertent pressure on the eye during closed mask anesthesia has induced central retinal artery occlusion in patients who also had sustained blood loss and shock.

Retinal Detachment

Dr. Dohrmann K. Pischel of San Francisco reported that the basic knowledge of the pathology and physiology of the causes and development of retinal detachment is now fairly complete. One broad problem on which research is still needed is the behavior of the vitreous in the living eye. What causes the vitreous usually to shrink markedly with age is not well known, nor is there knowledge as to how to cause vitreoretinal adhesions to disappear. When such adhesions are numerous or very marked some form of scleral resection is needed and an increasing amount of such surgery is being done. Dr. Pischel stated that the original penetrating scleral technique has been practically replaced by the lamellar scleral resection, a simpler

and safer operation. In his opinion it is the operation of choice among the various types of surgery advocated today. He pointed out that certain serious complications may occur, however, and described techniques which he feels will minimize these. As an adjunct to this operation or as a separate one the intra-vitreous injection of preserved human vitreous as recommended by Dr. Donald M. Shafer is a valuable procedure.

Dr. Guillermo Pico of Santurce, Puerto Rico, also discussed recent advances in the management of retinal detachment. Improvement in surgical results is due in part, he stated, to preoperational ophthalmoscopic localization of the tears. According to Dr. Pico, good results are still being obtained with the classical diathermy operation on 75 per cent or more of retinal detachments. Where this is not likely to be successful a number of techniques, all based on the principle of shortening the sclera, are now available, the most popular being the lamellar scleral resection. Dr. Pico said that

although some ophthalmologic surgeons, for apparently good reasons, are shortening the period of bed rest after surgery for retinal detachment, conservatism still seems wise in view of the 14-day period necessary to achieve wound healing, regardless of the technique employed.

Treatment of Trauma

A paper on the management of traumatic lesions and foreign bodies of the anterior chamber angle was presented by Dr. Harvey E. Thorpe of Pittsburgh. He outlined the diagnosis and treatment of blunt and perforating injuries and foreign bodies, emphasizing that the most careful planning and sound judgment are important aids. Contusion or concussion of the eyeball, he stated, may induce an attack of primary or secondary glaucoma. The former usually occurs in patients with narrow anterior angle. The latter may occur in patients with narrow or wide angles. When a contusion causes rupture of the globe careful attention to prolapsed tissues (judicious replacement or excision) and direct suturing of the scleral margins are important.

Increasing incidence of success in keratoplasty was reported by Dr. R. Townley Paton of New York. This is due to three factors: experience in the selection of cases; improved surgical technique; and successful treatment of postoperative complications. It is generally agreed that small central corneal scars with an absence of vascularization, and in an otherwise normal eye, give the highest incidence of success. Conical cornea, before hydrops or perforation occurs, gives the next highest incidence of success. Formerly the criteria was whether the patient had

20/200 or less sight with a contact glass. Now most surgeons prefer to operate when ordinary glasses fail to give adequate correction, and the condition is known to be progressive. Excellent results are now obtained in the familial dystrophies. Interstitial keratitis gives a good prognosis in the inactive stages, and when there is a minimum of superficial vascularization. Dr. Paton said that nearly all lime burns and other chemical damage give a bad prognosis.

Low Vision Aids

Discussing the effectiveness of low vision reading aids, Dr. A. Kestenbaum of New York described mikroglasses, microscopic lenses and aspheric lenses. The latter two types give a wider field than the mikroglasses, but are conspicuous and expensive. There are two important considerations in choosing between these aids: The glass should be determined by computation and not by trial and error; the distance of the text from the eye should be computed, and the patient taught to hold the text at that distance. Dr. Kestenbaum reported that in his experience with reading aids which were determined by calculation, not by the patient himself, success was obtained almost without exception; the only difficulties found were of a psychological nature. If the patient does not want to spend time and effort for reading he cannot be helped. The institution of low-vision clinics throughout the country is advisable.

Dr. George A. Hyman, New York hematologist, stated that the field of tumor chemotherapy is in its infancy, particularly in ophthalmology. Agents in use to date cannot effect a cure of malignant tumors and are particu-

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W. P. MARSHALL, president

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DL=Day Letter
NL=Night Letter
LT=International Letter Telegram

1201

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R WA861 LONG GOVT NL PD=THE WHITE HOUSE WASHINGTON DC 5=
DR BRITAIN F PAYNE, PRESIDENT (HOLD FOR ARRIVAL APR 7)=

INTERIM CONGRESS PAN AMERICAN ASSOCIATION OF
OPHTHALMOLOGY AND NATIONAL SOCIETY FOR THE PREVENTION
OF BLINDNESS HOTEL STATLER NYK=

PLEASE GIVE MY GREETINGS TO THE INTERIM CONGRESS OF THE
PAN AMERICAN ASSOCIATION OF OPHTHALMOLOGY AND THE
NATIONAL SOCIETY FOR THE PREVENTION OF BLINDNESS.

YOUR COMMON EFFORTS DEMONSTRATE THE MANY VALUES OF
COOPERATIVE APPROACH TO THE SOLUTION OF PROBLEMS WE FACE
TOGETHER. WITH YOUR IMPRESSIVE RECORD OF ACHIEVEMENT,
YOU ARE AN INSPIRATION TO ALL CITIZENS WHO ARE WORKING
TO PROMOTE THE HEALTH AND WELFARE OF THE AMERICAS.

MY BEST WISHES FOR THE SUCCESS OF YOUR MEETING=

DWIGHT D EISENHOWER==

larly valuable in combination with x-ray therapy or in palliation of specific tumors. In patients with retinoblastoma a new preparation of TEM (triethylene melamine) for parenteral administration is being used in combination with radiotherapy. Since TEM may be toxic modest leucopenia and thrombopenia are used as a therapeutic index. In 13 of 14 patients who have received this combination therapy, Dr. Hyman reported, the disease appears to be arrested to date. Other control studies are now being made.

The proceedings of these scientific sessions will be published by the Pan American Association at a date to be announced later.

NSPB Program

The National Society held three sessions under the following general subjects and co-chairmen:

Community Programs for Prevention of Blindness. Dr. Warren Palmer Dearing, deputy surgeon general, Public Health Service, Washington; and Dr. Luis Sanchez Bulnes, director, Mexican Society for the Prevention of Blindness, Mexico City.

Children's Eye Problems. Dr. Alfred Yankauer, director, bureau of maternal and child health, New York State Department of Health, Albany; and Dr. Guillermo Pico of Puerto Rico.

Glaucoma Detection Programs. Dr. Arnold B. Kurlander, chief, chronic

disease program, Public Health Service, Washington, D. C.; and Dr. Santiago Barrenechea, Santiago, Chile.

A fourth session on Education of the Partially Seeing Child was held under the chairmanship of Anthony J. Pelone, acting chief, bureau for handicapped children, State Education Department, Albany, N. Y. A report of this and several papers presented at the National Society's sessions appear in this issue. Others will be published later.

Conference Dinner

The growing recognition of the interdependence of the countries of the world was reflected in the program of the dinner held on April 9. Dr. Brittain F. Payne presided in an atmosphere of festivity and good will. He read the message from President Eisenhower that appears on page 73 and introduced many of the leading ophthalmologists and other conference members present. The principal speakers of the evening were the Honorable Adolf A. Berle, Jr., former Ambassador to Brazil and former Assistant Secretary of State, and Dr. Howard A. Rusk, associate editor, *New York Times*, and chairman, department of rehabilitation and physical medicine, New York University College of Medicine.

On the subject of "Professional Technique and Latin-American Unity" Mr. Berle said that technology is one of the greatest unifying forces in this continent. "You here represent one of the greatest civilized branches of medicine," he continued. "You profess a common medical faith. Your words, ideas and methods start from the same conceptions and proceed from the same reasoning. The doctor of Mayan or Inca Indian blood meets on even terms an American whose blood may

have come from anywhere in Europe or Africa. They understand each other. They understand each other when politicians do not. They can communicate through any kind of censorship.

"Your world is a free world. There can be no dictatorship in science; the truth eventually imposes itself. . . . The technology in medicine is one of the greatest forces moving towards the unity of peoples. There is no reason for your science except that you consider that men and women are valuable. This is the first great philosophical principle in international understanding. The second is that men and women interchange ideas. As each seeks to realize himself, he can do so only in the framework of unity which recognizes the value of all. Diplomats, of whom I have been one, may quarrel. Politicians may commit errors. The silent statesmen of science continue to build a world."

Doctors as Diplomats

Dr. Rusk discussed "Doctors as Diplomats," emphasizing that in the past few decades we have learned how much the security and welfare of one part of the world is dependent upon that of each other part. Mutual dependence has not resulted from practical necessity alone, he said; it also represents a desire to share, and to help our neighbors.

"Within the past decade," Dr. Rusk said, "there has been a great surge forward of international communication and sharing of knowledge among professions. This Pan American Association of Ophthalmology is such an example. Its members are motivated not only by the professional aspects of giving, receiving and sharing knowledge, but by their recognition that it

is only through such activities that the chain of international understanding can be welded. We recognize that in today's world international diplomacy and the development of international understanding cannot be solely the responsibilities of the diplomat; they must be assumed by all of us as professional persons and citizens.

"It has long seemed to me that in the field of rehabilitation we have a uniquely effective area of service and of responsibility for working toward international understanding. Health, including rehabilitation services for the handicapped, is fundamental to the prime concept of equal opportunity for all.

"Good health is fundamental to economic self-sufficiency. Dr. Charles W. Mayo summed up this relationship aptly when he said with great simplicity: 'Sickness makes people poor. Poverty makes people sick.' Trachoma is a striking example of this vicious chain. World Health Organization projects in Morocco and our own International Cooperation Administration projects in Iran and in Indochina in trachoma control have shown how this chain can be broken. By helping the people of the world to help themselves, we are also demonstrating to the world our belief in democracy and its better way of life. We are showing that freedom from disease and want can be attained without sacrificing political and social freedom.

"As doctors we have been responsible for the medical advances which have prevented millions of deaths throughout the world. Each represents a precious human life saved, but it also places a responsibility on us who helped save that life to give it dignity, purpose and meaning."

A Message from Helen Keller to the 1957 Conference

March 18, 1957

DEAR FRIENDS:

What I can do for those who are irremediably blind is limited, and leaves a vital desire unfulfilled—light in their eyes, and it is a blessed consolation to me to know of the splendid efforts of ophthalmologists all over the world to keep the light in human eyes. With deep emotion I follow their multiplying activities in using the knowledge they have acquired the past fifty years. Their enormous amount of research into the diseases and disorders of the eye and their prevention is a marvellous witness to their devotion. They regard people with ailing eyes not as patients but also as human beings, and seek to understand their feelings and their chances of happiness. They seek out facts in other sciences so that they may more fully serve their purpose, and their intelligence and self-sacrifice will accomplish wonders greater than we can now imagine, if they only gain the faithful support of philanthropists and health authorities.

The crusade of light is a long, arduous one, but the promises of the future will surely be fulfilled if you and the Pan-American Congress of Ophthalmology continue to deepen and widen research into the causes of blindness and encourage progress in new methods and techniques. Then shall the people of the world rightly understand their eyes and their responsibilities towards unborn generations and outlive the ignorance and the needless misery they once endured.

HELEN KELLER

AWARD OF THE LESLIE DANA MEDAL

THE presentation of the Leslie Dana Medal to Mrs. Eleanor Brown Merrill of Baltimore, Maryland, retired executive director of the National Society, was made on April 7, 1957 by President Mason H. Bigelow, who described her many accomplishments and her devotion to her work.

"For 28 years," he said, "this grand lady labored in the vineyard of vision conservation, labored so meaningfully that one can use her career as a year-by-year yardstick to tick off the great forward strides made in our field. The promotion of medical social services for eye patients . . . scholarships in medical social eye work . . . establishment of standards for nursing and social service in outpatient eye departments . . . vision testing among preschool children . . . arranging of many health institutes . . . organization of international conferences on prevention of blindness . . . these are but a few of her contributions."

Mrs. Merrill grew up in Baltimore, attended Bryn Mawr, and then entered volunteer work with the Charity Organization Society in New York. When World War I came she joined the American Red Cross. She came to the National Society in 1919 when diseases like trachoma and babies' sore eyes were taking their terrible toll. She worked tirelessly with these problems, helped solve them, and then moved on to others equally pressing.

From 1939 until her retirement in 1946 Mrs. Merrill served as the Society's executive director. She worked with Dr. George S. Derby of Boston in evaluating and promoting medical social service for eye patients; arranged



ELEANOR BROWN MERRILL

Effective organizer, inspiring leader in saving sight

for scholarships and for eye content of courses at cooperating schools of social work. Other projects which she administered or in which she participated included setting up standards for nursing service and medical social service in outpatient ophthalmologic departments; pioneer studies of methods for testing the vision of preschool children; and eye health institutes.

Mrs. Merrill had a part in various international conferences for the advancement of sight conservation. She made a survey in Europe which led Dr. Park Lewis and others to organize the International Association for the Prevention of Blindness.

Since her retirement Mrs. Merrill has maintained her interest in the conservation of vision, and is serving actively on the Board of Directors of the Maryland Society for the Prevention of Blindness.

At the 1957 Conference Luncheon, held in the Hotel Statler on April 7, New York's Mayor Robert F. Wagner pins the Leslie Dana Medals on two pioneers honored this year for their service in the field of sight conservation



EVELYN M. CARPENTER

Able organizer, pioneer in
community detection of glaucoma

PRESENTATION of the Leslie Dana Medal to Evelyn M. Carpenter of Monkton, Maryland, retired executive director of the Philadelphia Committee for Prevention of Blindness, was made by Robert F. Irwin, Jr., prominent Philadelphia attorney and member of the board of managers of the Pennsylvania Working Home for the Blind. Miss Carpenter attended Allegheny College, graduated from Jefferson Medical College Hospital as a registered nurse in 1912 and after war service in 1917-18 held various positions with the Philadelphia Health Council. In 1929 she was appointed supervisor of conservation of vision of the State Council for the Blind of Pennsylvania, serving until 1936 when she became executive director of the Philadelphia Committee for Prevention of Blindness.

Miss Carpenter showed vision and

remarkable resourcefulness in initiating many projects: cataract operations for Pennsylvania's blind pensioners; treatment for expectant mothers who had active syphilis so that their babies might be born serologically free of the disease; follow-up service for chronic glaucoma patients; successful campaigns for legislation in Pennsylvania to control ophthalmia neonatorum.

Miss Carpenter conceived the idea of mass screening for early detection of glaucoma and convinced the medical advisory board of the Philadelphia Committee that this would be of value. In 1944 a project was launched with follow-up service from competent ophthalmologists or hospital clinics. Between 1944 and 1953, 12,677 industrial and commercial employees were examined. Of this number 5,745 were examined in 1950 with the aid of a \$10,000 grant from the U. S. Public Health Service. Results of the first 10,000 examinations as reported in the *Journal of the American Medical Association* disclosed 84 cases of established glaucoma, 69 early, and 70 borderline, representing 2.24 per cent of the total number examined.

"It has been my privilege as a member of the Philadelphia Committee," Mr. Irwin said, "to know and to work with Miss Carpenter for 17 years. She possesses high intelligence, vision to recognize a problem, and the perseverance and ability to carry it through successfully. She is modest, and always mindful of the rights of others. Her every act shows the depth of her sympathetic human understanding."

COMMUNITY-WIDE GLAUCOMA CASE FINDING

AUDREY HAYDEN GRADLE and BURNETTA DOWNING

California Chapter
National Society for the Prevention of Blindness

Eleven G Days have been conducted successfully in Southern California under a plan suited to the community that is relatively small and compact.*

THE G Days in California came about as the result of a request from the Glendale Lions Club for a project on prevention of blindness. Although both the National Society and the Cleveland group discouraged undertaking a G Day, it was felt that the Cleveland plan might be modified so that a good piece of educational work on glaucoma could be accomplished.

The matter was studied and it seemed that if a G Day were carefully organized in a smaller, more compact community it would be practical. Glendale was just such a community.

The first step was to get the approval of the Professional Advisory Committee. It was the considered opinion of the group that if a G Day were held the procedure ought to include at least a three-point and preferably a four-point eye examination including visual acuity, fundus examination, tonometric testing, and fields, using the Harrington-Flocks Multiple Pattern Field Screener.

It was also felt that if any one of the above examinations were to be sacrificed it should be the field screening,

but that suspicious cases should get this test. It was also felt that there should be a second examination on all suspects in the offices of the private ophthalmologists.

Armed with this outline of objectives, Dr. A. Ray Irvine of the California Committee and Dr. Orrie Ghrist, chairman of the Project Advisory Committee for the Glendale G Day, were asked to request approval of the Los Angeles County Medical Association. This was obtained in December of 1954, and it has been the policy in every county in which G Days have been conducted since to get the approval of the county medical society before proceeding with plans.

Organization Plan

The organization of a G Day entailed an enormous amount of work. In each project since, the California Chapter has done all of the coordinating, taking responsibility for selection of the location, publicity, training of volunteers, and the organization of sub-committees.

The Lions Clubs have been asked to become sponsors, which means a membership of \$100.00 to help cover the California Chapter's expenses. The

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, New York, April 10, 1957.

clubs are also requested to underwrite the cost of the necessary drugs, equipment and printing.

The second step is one of organizing a committee which includes the prevention of blindness chairman in the Lions Club, together with their president, a representative of the California Chapter, the local health officer, medical doctors' wives and Lionesses. Also included on this committee are local representatives who would be affected in any way by the project. For example, at a recent G Day a professor of preventive medicine from the University of California served along with a representative from the Senior Citizens Club and the director of the Bureau of Public Welfare, as well as a health educator from the local health district.

Each job is allocated to a member of the committee. The person in charge of printing is responsible for:

- a. 1,000 record cards following the design of the Cleveland card with additions including the telephone number, which is needed for follow-up, a question in regard to previous treatment for glaucoma; also a question asking how the individual had heard of the project. (This information helps in analyzing publicity which can be modified accordingly.) It has been suggested that a question on future cards ask if there is a history of glaucoma in the family.
- b. 1,000 numerical cards, as the visitors are called by number.
- c. Between 3,000 and 4,000 multi-graphed notices of the G Day, which are distributed in invitation form to recipients of public assistance.
- d. Multigraphed notices to all the churches of the districts, accompanied

by a letter from the president of the California Chapter.

e. 1,000 pieces of educational literature on glaucoma. (Publication No. 13 of the National Society is used.)

f. 1,000 black occluders for visual acuity testing.

g. Red pencils which are supplied to each doctor for his use in indicating if a visual field scanning is to be done.

h. A large sign for the front of the building.

Choice of Building

An attempt has been made each time to find a building which is centrally located and easily accessible, a place where parking is not a problem, and where the floor plan is such that the traffic can flow smoothly in one direction.

A building is selected with a large waiting room seating approximately 500, a small space for record-taking, a room for visual acuity testing, a large room for ophthalmologists which can hold approximately 20 examining tables or several small rooms to accommodate the same number, an area for two or three Harrington-Flocks Field Screeners, and a space near the exit for education where each visitor is furnished literature on glaucoma.

If the findings appear suggestive the person is told that all the cards will be reviewed, and that if the doctors feel it would be desirable a letter will be sent to each suspect urging that he make immediate arrangements for a second examination in a medical eye physician's office.

If the findings appear negative, the person is told that though he shows no signs of glaucoma on the particular day, it is recommended that all per-

sons over 40 have a similar examination at least once every two years to help in the early detection of glaucoma when treatment can do most to prevent loss of sight.

Where there is a poor visual acuity and other findings appear negative, as an additional service the person is told that he might benefit from an examination to determine if he needs glasses or a change of lenses. Before leaving, each person tested is told not to touch his eyes for two hours in order to reduce the possibility of trauma following the local anesthetic.

So far, with one exception, the G Days in California have been held on Wednesdays, the ophthalmologists' day off, and we cannot be grateful enough for the generosity of these men who have willingly given their time and services for the cause.

An attempt has been made to avoid the rainy season, although recently the Santa Ana G Day was held in pouring rain, and the attendance was 1,023.

Provision of Equipment

The Committee on Equipment provides the examining tables, pillows, cartons for waste paper, paper towels, and the card tables which are used in the doctors' examination unit. Four visual acuity charts and three Harrington-Flocks Field Screeners have been provided in each case by an optical company president who is a member of the California Chapter's Board.

The list of drugs is made up by the ophthalmologist who is chairman of the project, and who plans on a probable attendance of 1,000.

The Committee on Movies provides a projector, screen and two projection-

ists, one for morning and one for afternoon, and shows the film "Hold Back the Night." "Johnny's New World" and a travelogue are also on hand to be shown if the wait is lengthy.

A committee is organized to set up the clinic the evening before G Day and to clean up afterward.

Concerning volunteers, one of the medical doctors' wives or one of the Lions' wives usually enlists 40 to 60 volunteers who serve for one half-day each. Red Cross, Civilian Defense and public health nurses have also served in appropriate capacities.

The ophthalmologist in charge of the Professional Advisory Committee procures the services of the local medical eye specialists. From 12 to 27 doctors have given their services on each of the various days. Where there are many, each serves for a half-day from 9:00 A.M. until 1:00 P.M. or from 1:00 P.M. until 4:00 P.M.

The morning personnel report at 8:45 and the afternoon group at 12:45. The volunteers are trained by the California Chapter and perform in previously designated areas, maintaining the flow of traffic, doing the preliminary record taking, assisting the doctors, and counseling each visitor as he leaves the clinic. In some instances trained volunteers have screened the central visual acuity. There has been an endeavor to use trained technicians to operate the Harrington-Flocks Field Screeners and these have usually been obtained from local optical houses or physicians' offices.

Publicity Campaign

It is felt that the publicity is very powerful, and all known media have been employed; but it has been found most effective to limit this to one week

FINDINGS ON FOUR GLAUCOMA DETECTION PROJECTS

	Number Tested	Number Referred	Glaucoma Cases Diagnosed	
			Number	Per Cent of Total
Alhambra				
1955.....	651	48	17	2.6
Glendale				
1955.....	689	51	23	3.3
1956.....	760	46	16	2.1
Santa Barbara				
1956.....	670	192	47	7.
	2,770	337	103	3.7

before G Day since the concentration has produced better effect than publicity which has been prolonged.

On request in some instances the newspaper editor has put a small box on the front page of the paper saying, "7 Days to G Day," "6 Days to G Day," and so on.

One week before the event there is a newspaper picture showing the key project representatives, accompanied by an article clearly defining glaucoma, why a G Day is being conducted, when and where it is to be held, and a story on the sponsoring organization. Later in the week there is a picture of the volunteers. Interspersed are three educational articles on glaucoma.

The city editor has been requested, at the time of the original newspaper contact, to consider a front page editorial for use the day before G Day. Releases for the press are always cleared by the ophthalmologist who heads the Project Advisory Committee and represents the local county medical society.

All the churches are furnished with a notice to be included in their bulletins the Sunday before G Day.

The invitations to the public assistance clients 40 and over are issued to their local headquarters two weeks prior to G Day and are sent by this department to be received no earlier than six days before the clinic.

Spot announcements have been used on the radio, and if possible ophthalmologists of the committee have discussed glaucoma either on TV or radio.

In some instances flyers have been put in grocery baskets, announcing the community service and explaining its purpose. These have also been placed in post offices, stores and other public buildings.

After the clinic, the records which are kept by the California Chapter are reviewed by the ophthalmologists and those with suspicious findings are set aside for a second examination in the private physicians' offices to determine whether the suspects have glaucoma. This is one of the most difficult features of the program, but a very necessary one.

Usually the local health officer signs the letters to suspects urging a second examination. A stamped card, addressed to the Chapter's office, is enclosed on which the ophthalmologist

states whether or not the suspect has glaucoma. In this way it is possible to keep constant check on the follow-up.

Results of the Screening

To date 11 G Days have been conducted in Southern California, nine of which have been organized and coordinated by the California Chapter. In two instances local ophthalmologists initiated the program, using the Chapter for consultation only.

A total number of 7,334 persons have been screened. Newly diagnosed glaucoma cases have run between 1½ per cent to the surprisingly high 7 per cent. The table gives findings for G Days in Alhambra, Glendale and

Santa Barbara where follow-up has been completed. No persons were screened who admitted to having been treated for glaucoma.

The high rate in Santa Barbara undoubtedly was related to the high median age of those screened—63 years. In that survey 71 per cent of those screened were women and 29 per cent men. The follow-up there was completed quickly because the second examination was made without charge.

One of the most interesting side results of a G Day is that the ophthalmologists report to us that afterwards they see a lot more glaucoma in their private practice as a result of the publicity attendant on G Day.

LIONS GIFT TO THE EYE BANK

Substantial aid to eye research has been given by the Host Lions Club of New York. At the club's annual Ladies Day luncheon, held at Longchamps Restaurant, 19 West 57th Street, on June 4, a check for \$1,000 was presented to Dr. R. Townley Paton, vice-president of The Eye Bank for Sight Restoration, 210 East 64th Street. Dr. Franklin M. Foote, executive director of the National Society for the Prevention of Blindness, made the presentation on behalf of the Lions Club.

An appeal for one dollar from each of the 561,000 members of Lions International to help prevent blindness was made by Ernest R. Fryxell, past president of the Lions Club of New York. Mr. Fryxell said that such donations would help the Lions reach a goal of \$2,500,000 in its campaign against blindness. He emphasized the need for all eye banks to be affiliated with the new national ophthalmological committee on eye banks, and strongly de-

plored the setting up of two competing eye banks in the same area. Stanley Wartenberg of the New York Lighthouse, co-chairman of the Lions' Blind Aid Committee, also spoke on the problem of blindness. Among those present were Dr. E. G. Gill of Roanoke, Virginia, past president of Lions International and Frank J. Horthy of Wilmington, Delaware, a director of Lions International.

AAOO HOME STUDY COURSES

The 1957-1958 Home Study Courses in the basic sciences related to ophthalmology and otolaryngology, which are offered as a part of the educational program of the American Academy of Ophthalmology and Otolaryngology, will begin on September 1 and continue for a period of 10 months. Detailed information and application forms can be secured from Dr. William L. Benedict, the executive secretary-treasurer of the Academy, 15 Second Street, S.W., Rochester, Minnesota. Registrations should be completed before August 15.

OPTICAL AIDS SERVICE of the Industrial Home for the Blind

LEO ESBIN, M.D.

Staff Ophthalmologist
Industrial Home for the Blind, Brooklyn, N. Y.

A preliminary report of the first 500 clients served
under a program inaugurated four years ago.*

THE Optical Aids Service was instituted at the Industrial Home for the Blind in March 1953 after consultation with leading ophthalmologists and optometrists in this area. We were fortunate in securing for refraction and the fitting of glasses the services of Dr. George O. Hellinger, a Brooklyn optometrist who had had 15 years of special experience with subnormal vision patients.

A schedule of examination appointments was set up at our headquarters on the basis of one half-day per week, but the demands for service were so heavy that this was increased to one day per week. As the program expanded a second center was established in Jamaica, Long Island, offering service one half-day per week.

Policies and Procedures

During the four years policies and procedures have been developed which now stand as follows:

In order to be accepted for IHB Optical Aids Service an individual must meet the following conditions:

1. He must be classified as "blind" under the New York State definition

* Abstract of paper presented at the Annual Conference of the National Society for the Prevention of Blindness, New York, April 8, 1957.

of blindness, on the basis of an ophthalmological report. This report must further show that vision cannot be improved by medical or surgical procedures, and that the use of magnification for study, reading or work is not contraindicated.

2. He must live in the area served by the IHB, namely, the four counties of Long Island.

3. He must express a desire for the examination, and this desire must come from within himself. It is preferable that he have in mind a specific purpose for which better vision is important to him, as, for instance, necessary reading on his job, viewing television or reading street signs. Any individual who meets the above requirements may apply. Even though it may appear obvious in advance that optical aids cannot benefit him, he is given an opportunity to be examined by one of our staff optometrists.

Teamwork Program

The Optical Aids Service is essentially a program of teamwork in which the social caseworker (and sometimes the vocational counselor), the ophthalmologist, the optical aids counselor and the optometrist play their respective roles.

Each client who applies for Optical Aids Service is referred first to the Social Service Department for clearance or "intake" service. The caseworker calls on the individual to become acquainted with his general situation and to discuss the specific benefit he hopes to derive from optical aids. She attempts to learn whether he is personally eager for the service or whether his request is in response to prodding from some friend or relative; and, in order to prepare him for possible disappointment, explains that not every case of blindness can be helped by optical aids.

If the client is of employable age, and desires employment, the caseworker refers him to the vocational counselor and works closely with the latter, especially in regard to the visual needs of various jobs. She also arranges with his permission to obtain an eye examination report, not more than a year old, from the ophthalmologist or clinic where the client has been receiving care, and clears this with the New York State Commission for the Blind for classification as "blind" or "not blind" under the legal definition.

The ophthalmologist who examines the client reports his findings as to vision, pathology, diagnosis, and recommendations for medical or surgical care or the use of optical aids. He indicates also any restriction on the client's use of his eyes or on his general physical activity.

If this eye examination report is not entirely clear, it is referred to the staff ophthalmologist for interpretation. The staff ophthalmologist also examines those clients who do not have an active connection with any ophthalmologist or clinic and cannot af-

ford to pay for a new examination. This ophthalmological report is an absolute prerequisite to the optical aids examination since it establishes the client's status with regard to blindness, insures that the possibility of improvement by medical or surgical care is not overlooked, and protects the client against inadvertently using his eyes in any way which might be harmful.

When the Social Service Department has made its study of the case and ophthalmological clearance has been completed, an appointment is made for the client to visit our Optical Aids Center.

The optical aids counselor schedules appointments and serves as liaison with the Social Service Department. On the first visit the counselor takes a brief history of the case with special reference to the client's practical use of his vision and his most important visual needs. The counselor summarizes the history for the staff optometrist, assists during the examination, helps with the recording, and interprets the examiner's findings to the client as needed. If the client has difficulty later in using his optical aids and returns to the center for help, the counselor, under the direction of the staff optometrist, gives further instruction.

The social worker's visit, the ophthalmological report, and the history taken by the optical aids counselor serve as preparation for the low-vision examination itself. This is a time-consuming, painstaking procedure by which the staff optometrist determines the client's vision problem. He brings to bear on it his special refraction technique and his knowledge of ophthalmic lenses and low-vision aids for



Microscopic lenses make the designing of dairy industry machinery easier for this engineer who could not do his work visually without this aid.

the purpose of discovering the appliances and conditions which will enable the client to achieve maximum use of his remaining vision. He tests the client's ability to read letters and numbers at varying distances with lenses of varying strength; and adjusts the lighting to determine that which is most satisfactory for the individual. He considers the usefulness of such auxiliary appliances as the ptosis crutch, the pin-hole disc, the side-shield, and the visor. Throughout the examination he maintains an attitude of encouragement so that the patient may put forth his best efforts, without feelings of tension or frustration.

It may require from two to six visits (sometimes even more) by the client before the examiner is ready to reach a final conclusion and write a prescription for the appliance or combination of appliances which will give optimum results. When the appliances are delivered the examiner checks the results the client can obtain. He reemphasizes the importance of correct

lighting, of maintaining the posture and reading distance which have been found most satisfactory, and the need for continued and repeated practice in using the lenses to obtain best results. The client is encouraged to return for further advice if he experiences difficulty with his appliances.

We feel that the teamwork approach is of basic importance and that the functions of each member of the team should be clearly understood.

Low-Vision Examination

The low-vision examination involves the measurement of vision and the prescribing of appropriate lenses to provide optimum vision, but in the case of the blind client with residual sight it involves much more. To most of these patients who have been cut off from many normal activities even a slight increase in visual efficiency is important, although the same amount of increase would seem negligible to one with normal sight. It is very difficult to comprehend this visual psychology of the near-blind patients on the basis of experience gathered through general practice. In fact, the concepts associated with visual analysis of the normal-sighted person must be discarded, or they may prevent the practitioner from helping the low-vision cases effectively.

Further, many of these patients have for years been discouraged from using the remnant of vision they possess. In their activities and relationships the emphasis has been on how blind they were rather than on how much they could see. Time is required to help them make the necessary psychological shift and to stimulate the effort to see. Accordingly, the keynote throughout the examination is ex-

treme deliberation, and allowance must be made for the patient's slowness of response. The tone must always be one of encouragement, but absolutely without pressure or haste. Frequent pauses in the procedure give the patient opportunity to relax and avoid development of tension.

The patient's motivation has been found to be one of the determining factors in his successful use of optical aids. If he has clearly in mind one or two specific purposes for which he expects to use his increased vision—as, for instance, to read the newspaper or to view television—he has a directed incentive which stimulates him to continued effort. Moreover, if he achieves this particular goal he is much more likely to feel that the aids are useful, and to be satisfied with what can be done for him, limited though it may be.

Equipment Needed

Equipment for these examinations varies considerably from that in general use. Specifically, the testing charts, both for distance and near vision, must be in small-step gradations. From 20/800 to 20/70 is the necessary range in Snellen charts, and several different charts will be required to cover this full range.

Between 20/200 and 20/100 the gradations should be: 20/175, 20/155, 20/137, 20/122, 20/109 and 20/97, and the tests should be made at a standard distance of 10 feet instead of the usual 20 feet.

For near vision a variety of reading cards must be assembled to provide a wide range of type sizes, 24, 18, and 14 point, as well as the usual smaller sizes. The cards should include numbers, letters, and simple words.

The examiner must determine the

distance at which the reading matter is to be held to assure focal ease and optimum results; and this distance will differ for each individual. In certain cases the patient will need to keep the focus constant and move the reading matter from side to side instead of moving the eyes. In some cases also the focal distance will be only a few inches and the reading matter must be held so close that it has been described as "reading with one's nose."

The illumination needed for optimum results also varies from one patient to another, and several arrangements of lights should be tried to determine the most satisfactory. The use of side-shields, visors and similar auxiliaries will sometimes in itself improve visual acuity.

The subjective factor must not be overlooked. No two cases are alike, and the emotional and social implications of eye defects are numerous and varied. To a greater extent than among normal-vision patients, each case will have its own characteristics and problems. In general, the examiner must put aside his customary procedure of comparing the patient's vision with a predetermined standard, and concentrate with all his ingenuity and resourcefulness on arriving at the set of conditions—lenses, lighting, distance, focal ease and posture—which afford the patient maximum efficiency and comfort in seeing.

STUDY OF FIRST 500 CASES

The IHB Optical Aids Service was initiated in March 1953 and by January 1956, 500 individuals had been served. Shortly afterward it was decided to study these cases to determine how many had been helped; to learn what use the clients were making of

their appliances and what their increased vision meant to them; to discover ways in which the service might be improved, also areas which called for further exploration in the future.

The material used for this analysis consisted of the ophthalmological report; the report of the staff optometrist's findings and prescription; and statements from the clients themselves as to their experience in the use of their optical aids. Such statements were made in reply to a schedule of questions filled out either by the client or by a member of the IHB staff in an interview with the client.

By the time these schedules were filled out the most recent client in the group had had his appliances at least 11 months and most of them much longer.

Number Helped

Of the 500 clients studied, 340 (68 per cent) had received useful improvement of vision by means of lenses and other appliances prescribed. In 70 cases (14 per cent) the client technically could have been benefited by optical aids but for psychological reasons, or because of inadequate motivation, was unable to make satisfactory use of them. In the remaining 90 cases (18 per cent) the client could not be prescribed for.

Age of Clients

The 500 clients ranged from 5 to 91 years of age, the largest group (18 per cent) falling in the 30 to 39 year group. Age appeared to make no significant difference in respect to the ability to benefit by optical aids, except in the group aged 80 years and over. In this group of 23 clients, only 12 were prescribed for. Of the remain-

ing 11, six could have been prescribed for but were not able to adapt to the use of the appliances.

Length of Time Blind

Although the client's age seems to make little difference in his success with optical aids, the length of time he has been blind is a factor of great importance. Of those who had been blind less than two years, only 47 per cent were fitted with lenses; while an additional 23 per cent could have been prescribed for but were unable to adapt to their use. The percentage of clients who could benefit increases with the duration of blindness up to the point of 15 years' duration.

Clinical observation seems to indicate that those who have recently become blind hope that the optical aids will give them back the sight they have lost; less than this does not seem worth while to them and they fail to make the necessary effort. On the other hand, those who have been blind long enough to become adjusted to their situation and who have been for some years deprived of certain visual activities are able to appreciate the value of even a small degree of improvement and are willing to make the effort and put up with the limitations involved.

Amount of Improvement

Of the 340 clients who obtained increased visual acuity by means of optical aids, 187 (55 per cent) received improvement in distance vision and 234 (68.8 per cent) in near vision. (Some clients, of course, received improvement in both.)

In distance vision there was substantial increase in every vision group, and 83 who had visual acuity of less

than 10/97 (approximately 20/200) at the time of application were improved to visual acuity of 10/97 or better.

For near vision, out of 167 clients who were unable to read Jaeger 12, 77 were enabled by the optical aids to read Jaeger 5 to 12, and 69 were enabled to read Jaeger 1 to 4.

Causes of Visual Difficulty

Of the 500 clients studied, 303 (60.6 per cent) were blind from involvement of the choroid and/or retina, and of these 70.0 per cent were benefited by the aids.

The group next in size consisted of 119 clients who were blind from involvements of the optic nerve and/or pathways, and of these 64.7 per cent were benefited.

In general there appears to be no substantial correlation between the causes of visual difficulty and the ability to benefit from optical aids.

Number of Visits

There is need for repeated tests and observations of the low-vision client before a prescription can be given. The average number of visits per patient was four; some patients made more than 10. Those who made only one visit were for the most part the clients who could not be prescribed for.

Prescriptions Given

The prescriptions given included distance, near, and bifocal spectacles of radical powers and prescriptions: Feinbloom microscopics and telescopics; Policoff microscopical bifocals; Kollmorgen telescopics; contact lenses; Bechtold microscopics; 3.5 sports lenses; and auxiliary aids. Of course some clients received more than one appliance, as indicated by the fact

that 520 prescriptions were given for the 340 clients who were prescribed for. Of these prescriptions 151 were for near-vision spectacles, 139 for distance, and 68 for bifocal.

Reports from Patients

Clients who received lenses for distance vision reported that they used their glasses when walking on the street, for viewing television and for watching sports events. One hundred sixty-eight clients reported that they used their optical aids for leisure-time reading, and of these 83 stated that they had given up reading years before. Other activities for which clients used their near-vision lenses included looking at pictures, sewing, stamp collecting, coin collecting, photography, writing, playing Bingo and other games and reading music.

Thirty students, 13 housewives, and 98 gainfully employed clients said they used their optical aids at work and in their studies. Occupations of these gainfully employed men and women included factory worker, auto mechanic, shipping clerk, packer, salesman, porter, clerical worker, accountant, lawyer, musician, teacher, social worker, executive, and engineer. Several reported that they had been able to return to their previous occupations because of their low-vision aids.

CONCLUSIONS

Some of the conclusions reached at the Industrial Home for the Blind as the result of four years' experience follow:

1. The examination and fitting of clients who have subnormal vision is a specialist's job. Not only does it require special equipment and an approach different from that called

for in general practice, but the time element—an average of three to four hours per patient—is infeasible in general practice.

2. The teamwork approach is essential to the overall success of the program, and each member of the team has a specific part to play in achieving the end result.
3. There are definite advantages in having the optical aids service integrated into the program of an agency for the blind. This is the agency to which blind people are accustomed to turn for service, and the optical aids service can be readily related to the total needs of the individual, particularly in social and vocational rehabilitation.
4. The client's motivation is an important factor in the successful use of optical aids. He must have incentive to put forth his best effort and must be able to reconcile himself to unavoidable limitations in the improvement he receives.
5. Even a slight improvement of vision is of great value to these individuals who fall within the definition of blindness.
6. Training of the client in the correct use of his appliances, and follow-up service to encourage him to continue to practice their use, can be of great importance in enabling him to reach maximum benefit.
7. Many persons whose visual acuity falls between 20/200 and 20/70 could undoubtedly be benefited by the use of optical aids, and facilities should be provided for this group. We have felt, however, at IHB, that as an agency for the blind we have first responsibility for those who fall within the legal definition of blindness.

This report has been presented in the hope that it may be useful to other agencies which contemplate a similar service. Such a program must be adapted to the local situation. For instance, we have been very fortunate in having as a member of the Optical Aids team a specialist who does both refraction and fitting of glasses, and we think this is the ideal set-up. In other communities this may not be possible. One must work with what is available.

This has been a preliminary report of the findings of our study of 500 cases. We anticipate publishing, within a few weeks, a complete report, fully documented and with more detailed breakdowns than space has permitted us to provide here.

PHARMACIST IS ALLY

The alert pharmacist is often in a position to advise a customer complaining of vague eye symptoms to see an oculist—possibly saving his vision. As a contribution to the anti-glaucoma cause the Colonial Pharmacy of Hamden, Connecticut recently ran an advertisement in the *New Haven Register* which tells this story:

A customer comes in for a soothing eye lotion, but the pharmacist realizes that his symptoms are suspicious, and persuades him to go to an ophthalmologist. "Glaucoma was the diagnosis and therapy started," the story goes on. "Again we experienced the art of losing a sale, for the symptoms of early glaucoma are vague and often overlooked. To expedite diagnosis and bring these cases to the attention of the ophthalmologists, before it is too late, is in itself sufficient reward."

Prevention of blindness agencies may well encourage local pharmacists to follow this commendable practice and thus alert many citizens to the need for professional eye care.

PRESCHOOL VISION SCREENING

FLORENCE CUNNINGHAM, R.N.

Nurse Consultant
National Society for the Prevention of Blindness

More than 300 volunteers are now devoting time and energy to projects in various cities, demonstrating the value of including vision testing in the total health supervision of all preschool children.*

IN Atlanta, Georgia, recently a school nurse told me of a first-grade child who, after getting corrective lenses, was taken by her mother to a movie. "Why, mommie," she exclaimed, "they're people!"

A public health nurse in a rural area of South Carolina related that in making a visit to a newborn infant she had found in the home an eight-year-old child whose vision was so poor that he had never been able to attend school. Surgery for congenital cataracts restored this child's vision and in one year he completed three years of school work.

In order to avoid the waste and tragic effects that such visual loss can inflict upon the child, the National Society has long advocated the inclusion of visual testing in the total health supervision of the preschool child. This need was demonstrated statistically by a research study made in 1925 in New York City by the National Society in cooperation with 12 ophthalmologists.

During the impressionable years in the child's life before he begins school

much of what is learned of his environment and his relationship to it is learned through the visual process. An eye defect unknown to the child's parents might so adversely affect his performance in comparison with other children of his age as to leave a lasting imprint. Our desire to encourage testing of the preschool child's eyes presented the problems of how to reach these children and who was to screen them.

Birmingham Project

An opportunity to demonstrate whether screening of large numbers of three- to five-year-olds for eye defects by a volunteer group would yield productive and reliable results came to us in 1951 when the Junior League of Birmingham, Michigan, became interested in conducting such a program in Oakland County on a demonstration basis. Our field service consultant set up the community organization for the program, after which our nurse consultant held training classes with the volunteer group. This precedent has been followed in subsequent projects.

Community response to this first program was gradual. For that reason it was limited to a small area, proved

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, New York, April 9, 1957.

there to be worth while, and then broadened to surrounding communities in the county. Three years after the initiation of the project it was received most enthusiastically. In its early phases the volunteer testers would sometimes become discouraged over the small numbers of children brought in for screening, but in 1954 the project chairman reported that the problem was no longer one of getting parents to bring children but how to maintain the testing stations to best serve the vast numbers who availed themselves of the service. This gradual but progressive stimulation of parents' interest has since been observed in other communities.

In the Oakland County project, from 1952 to 1954, a total of 2,121 children were screened and 215 referrals made for eye care. The work there demonstrated that: there is a need for early vision screening; that it can be successfully done by trained volunteers; that community cooperation and organization are essential for the success of the program; that education of the public for this need is slow but can be accomplished through such media as newspapers, radio and TV programs, parent-teacher groups and women's clubs.

Programs in Eleven States

Since 1951 the National Society has launched 24 preschool screening programs in 11 states; 22 of these are continuing community projects. The volunteers of one group found themselves faced with a different program which, in their opinion, had to be given priority; and in another case the difficulty seemed to be a lack of understanding by community health agencies. We learned from all these

experiences as to the importance of: (1) assessing and meeting community need; (2) full cooperation and understanding by local and state health agencies; (3) making certain that the volunteer group understands the elements of and the time required for a successful program before agreeing to take it on.

In all these programs a total of 22,009 children have been screened and 1,282 referrals made for professional care. Reports from ophthalmologists and optometrists have indicated that most of these were needed referrals and as a result the children received correction or treatment. Reports from a few communities will best demonstrate the results.

In Savannah, Georgia, 1,645 children were screened in 1955 and 82 were referred; 59 eye examination reports were received confirming that 46 had needed referral. The parents of the remaining 23 were visited by the public health nursing organization but for one reason or another we have no report that these children came to professional attention. Several of these families had moved; all were accounted for by the local public health nursing service. The referral of 52 children resulted in several getting correction for myopia, one child getting treatment for congenital cataracts, and one receiving surgery and treatment for strabismus, the latter arranged through the local Lions Club and the Lighthouse.

In Louisville, Kentucky, 1,416 children were screened in the fall and winter of 1955-56; 82 were referred for care and professional reports were received for 63. Three others were reported by parents to have received correction or treatment. Of the 63

reports 48 were necessary referrals. The doctors in Louisville reported that they were particularly gratified since several of the referrals meant enabling children to receive treatment for strabismus before it was too late to restore vision to the eye which had been suppressed.

In Grosse Pointe, Michigan, where the program was started in February 1956, 229 children were screened that winter in local nursery schools, resulting in eight referrals. Of these one child had congenital cataracts, one myopia, one was given glasses but the condition was not indicated, two were to remain under the doctor's supervision, instructed to return in six months.

How To Begin

How to begin the program and where to screen must be decided in each community according to the local situation. When a health agency or a volunteer group demonstrates interest our field service consultant first gets in touch with local eye specialists to determine if, in their opinion, it is desirable. If they think it is, and the local health department and county medical society approve, plans are made to set up a project advisory committee. The function of this committee is to establish what screening methods should be used, the criteria for referral, with what groups or where screening should be done, and to plan for publicity. Progress reports of the work are made periodically to the committee.

We have found it worth while to have representatives from the following groups on the advisory committee; ophthalmologists, optometrists, pediatricians, the health department, public health nurses, nursery school

teachers, medical advisers in the local schools; also the chairman of the volunteer group interested in carrying out the program.

In most communities it is advisable to begin the screening in nursery schools where the young children are already congregated. When this is done parents are informed of the plan and given educational material on eye hygiene of the young child. From this as a starting point plans are often made to extend screening to larger segments of the preschool population.

In Oklahoma City, for example, screening areas are set up in strategically located churches, and certain schools assigned to each church. Letters are sent home with school children who have younger brothers and sisters, apprising the parents of the opportunity, and news of the program is disseminated through parent-teacher groups and their monthly newsletters. Newspapers, radio, TV, meetings with service clubs, and labor unions are all utilized. Robert W. King, M.D., an ophthalmologist in Oklahoma City, reported on the value of the program in an article, "Visual Screening of the Preschool Child," that appeared in *The Journal of the Oklahoma State Medical Association* for September 1956. During the second year of screening in this city the problem is becoming one of how best to serve the large number of children.

In Texarkana letters through school children and parent-teacher groups are also used, and screening areas are made available to the volunteers in the schools. Response of parents to both of these projects has been excellent. On one of the days set up for screening the heaviest snowfall in many years occurred. In spite of this several par-

ents trudged in with their children (one mother had three small ones), anxious as parents are, to give their own all possible advantages.

In cooperation with the Division of Public Health Nursing of the Westchester County (N. Y.) Health Department, a project was started in 1955 by Delta Gamma as a part of the program for preschool children in the child health conferences, a service which offers medical and health supervision from infancy to the time of starting school. It was found that for smoothness and efficiency it was better to set up definite schedules for screening days in the health centers than to include the procedure at the time the child has a complete physical examination, which sometimes includes an immunizing injection; in other words, the terror of his young life—a needle. Very often a nurse works with the volunteer team, interviewing the parent and teaching the youngster the response to the symbol E chart. A beginning has now been made in Westchester County to extend the service beyond the health centers to children in nursery schools.

Use of Snellen Chart

Snellen screening with the E chart correlated with observation for symptoms is the method employed in all the projects. A few have added the Hirschberg test for detection of tropias and two have added a cover test. One has added a picture chart for young three-year olds who do not grasp how to indicate the direction of the shafts of the E symbol. This was done in the hope of locating early children with a beginning amblyopia; it is not intended as a precise test for visual acuity. The criteria for referral are decided by the

local project advisory committee. This varies according to what is considered practical in the community and according to the judgment of the eye specialists. Usually three-year-old children are referred for visual acuity of 20/50 or less (missing the 20/40 line) and four-year-olds referred for 20/40 or less (missing the 20/30 line) in either eye or both.

In some communities children are referred for a difference in visual acuity of the two eyes, even if it is within the passing standards, if this is found to be the same on two successive tests. All children who are unable to see the critical line are re-screened at least one day later.

Children are taught, often in small groups, to point with their arms and hands in the same direction that the "table legs" are pointing, the E symbol usually being interpreted as a table in order to make it meaningful for the practical minds of the small fry. When it is observed that the child understands this "game," he is ready for screening.

Teams of Three Volunteers

The volunteer screening team consists of three people—one to greet the child, establish a friendly rapport, stay with him during the testing and hold the occluder as each eye is tested separately. The second volunteer who is at the chart, located at a distance of 20 feet, shows one symbol at a time through a window card. The third records the findings, helps in the observation of the child, and, if desired, does the Hirschberg test or other test for tropias.

We have found it advisable to limit the classes of volunteers to about 20, in order to be able to work individually

with them in practice periods. At least four two-hour sessions are needed. The material taught in the training sessions includes reasons for screening, interpretation of limitations and potentialities of the screening process, physiology and growth of vision in the young child, refractive errors and related symptoms, observation for signs of eye trouble, demonstration of screening, practice with each other, practice with young children under supervision of the nurse (usually arranged with a nursery school teacher), approach to the young child, responsibility of the volunteer as a member of a community health team, and details of referral and follow-through.

The latter have been worked out with the director of the public health nursing agency prior to the class period. Forms used are worded in accordance with the thinking of the project advisory committee. When the child, after re-screening, is unable to see the critical line on the chart, the parent is given a report that the child could not see the line most children of his age can see, and that while this does not necessarily mean that glasses are indicated, it is advised that he be taken for a thorough, professional eye examination. If the child presents symptoms, the parent is advised to seek professional attention. With either of these referrals, the parent is given a form to take to the doctor so that he can know the results. When no professional report has been received in a designated period—two or three months—the family is referred to the public health nurse for follow-through.

In those communities where the work has been the most effective a close and cooperative relationship has

been established between the public health nursing organization and the volunteer group. It is useless to screen unless we can make sure that most children referred do get competent eye examinations. Public health nurses have rendered invaluable help with their knowledge of community resources, their experience in health guidance and their visits to homes for interpretation of the testing.

Informing the Parent

When the screening is carried out in the nursery schools, the teacher often observes it and usually interprets results to the parent in an interview. When done in the well-child conferences, the public health nurse performs this function, and when public screening is done a volunteer informs the parent of the results. In the latter situation if the parent indicates that she doesn't know how to proceed, that she would like help in deciding to whom to go, or that she is financially unable to take her child for care, the volunteer at that time refers her to the public health nursing agency for aid in formulating her plans.

In all these projects there is a total of 336 volunteers who are willing to devote their time and energy to this work. Most of them are mothers, many with young children. For them it means the added burden of reorganization of home duties in order to provide the time, arranging for babysitters, setting up the program in such a way that they can meet their own Johnnies or Marys when school is out. No words can express the gratitude the National Society feels toward these tireless, devoted and imaginative women. Without them these successful preschool screening programs

could never have been developed. Of far greater significance, however, is the care that children have received.

How Children Benefit

Many examples of individual children who have benefited are told to the volunteers by grateful parents or appreciative physicians, or by the public health nurse who makes the home visit. In Oklahoma City, as a result of public health nurse follow-up of a child referred for strabismus, five other cross-eyed children were found in the same family. Through community organizations care was arranged for all. In Louisville, Kentucky, a shy, withdrawn little girl became friendly and happy in her school environment after she was given corrective lenses. In Atlanta, Georgia, a child commented about seeing the *leaves* of grass after getting her new glasses.

Public health nurses report that teachers in the nursery schools have shown increased interest in the eye health of their children, that they are more sensitive to behavior and appearances which might indicate eye trouble, and in some cities more requests for volunteer screening teams are made by the nursery schools than can be provided. In one community the volunteer team was asked to work with the school nurses in preparing members of the parent-teacher association to screen kindergarten groups.

Our ultimate goal is a professional eye examination for all children before school age. This concept is included in the leaflet given to parents about the screening program. Volunteers often tell us of their experiences as well as those of their indoctrinated friends in consulting eye specialists for their children as a preventive measure.

Volunteers are Parents

Who are these volunteers? How are they recruited and what abilities do they need for screening? Probably the most important qualification is the ability to relate well to small children. Most of the volunteers are parents who feel at ease working with children. Usually they are selected by the program chairman of the group undertaking the project. Twelve of the programs have been initiated by alumnae chapters of Delta Gamma Fraternity; others by the Junior League, some by wives of Lions Club members, some by the local Women's League organization, and others by women who have been drawn together because of their mutual interest in working constructively in sight conservation.

In Savannah, where the program was started under the auspices of the Junior League, it has broadened to include five additional organizations: Hadassah, Women's League of Savannah, B'nai Brith, Women's Auxiliary of the County Medical Society and the National Council of Jewish Women. This expanded program in which the entire city has been divided into districts with one organization assigned to each district is aimed at reaching most of the 8,000 four- and five-year-olds.

The feeling of the volunteers themselves has been well stated by the chairman of the Savannah project:

"When you find even one eager little person who is missing so much of the world around him, or straining to do what is normal for another, or who might lose a year in school because an 'a' and an 'e' look alike to him, how can anyone but feel the job is worth the effort and very gratifying."

RESULTS OF A VISION SURVEY

THOMAS S. EDWARDS, M.D.

New York, N. Y.

When free visual acuity tests were offered by New York Eye and Ear Infirmary during Sight Saving Month more than half of the persons tested were found to need complete eye examinations.

IN connection with New York City's observance of Sight Saving Month last September several hospitals offered to give a free visual acuity test to any person desiring one. During the week designated for this service about 2,000 persons were checked.

At the New York Eye and Ear Infirmary the resident physicians checked the vision of 904 patients. While this is not a true sampling of New York's population it does represent a group of citizens interested in knowing the condition of their eyes. The results of the testing are shown in the accompanying table.

The largest category were the 392 patients (43 per cent) with acuity of 20/30 or better in both eyes. This group was considered to be normal,

though not strictly 20/20, and were not referred for further examination.

The 399 patients in the next two groups had acuity between 20/40 and 20/70. It was felt that in these cases there was a mild uncorrected refractive error or an early, mild pathologic change. All were referred to their own practitioners or to eye clinics. If any had early pathologic changes, such as glaucoma, they would retain useful vision under successful treatment.

Of the total of 904 patients tested 791 or 88 per cent had 20/70 or better in both eyes which, though not normal, is good useful vision.

It will be noted that 53 patients, or 6 per cent, had 20/70 or better in one eye and 20/100 or 20/200 in the other eye; another 35 patients, or 4 per cent,

Results of Visual Acuity Tests, N. Y. Eye and Ear Infirmary

	No. Tested	Per Cent
20/30 or better OU.....	392	43.5
20/30 or better & 20/40-20/70.....	162	18.0
20/40-20/70 OU.....	237	26.3
20/30 or better & 20/100-20/200.....	16	1.7
20/40-20/70 & 20/100-20/200.....	37	4.1
20/30 or better & below 20/200.....	12	1.3
20/40-20/70 & below 20/200.....	23	2.5
20/100-20/200 OU.....	15	1.6
20/100-20/200 & below 20/200.....	4	0.4
Below 20/200 OU.....	6	0.6
Totals.....	904	100.0

were below 20/200 in the other eye. This means that almost 10 per cent were using only one eye. All of these patients were referred for thorough examinations since it was likely that they had advanced pathologic change in the bad eye. Many were unaware of this condition. Some had been planning to see an ophthalmologist but could not, or would not, take time off from work. Since our testing was done after work they were able to attend and a few were stimulated enough to make an appointment for the following Saturday. Probably this is the group where the most help is possible.

The last 2½ per cent comprised patients with poor vision in both eyes, most of whom were aware of their condition. Of these 6 were legally blind. All of these were referred.

It was our feeling in this survey that the average person is interested in the state of his vision. However, many procrastinate, putting off a check until it is offered to them in easy circumstances. Then if they find out that their vision is not all that they thought it was they will take the time and effort to have the condition corrected. Thus an annual visual acuity survey by many eye clinics in conjunction with Sight Saving Month sponsored by the National Society for the Prevention of Blindness would be valuable.

Study of General Practice

An analytical study of general practice in North Carolina appears in the *Journal of Medical Education* for December 1956.

In the section dealing with physical examinations the practices of 84 physicians in relation to the eyes are reported as follows:

No examination or examination limited to inspection of the conjunctivae, 74 per cent.

Examination of conjunctivae with occasional determination of visual fields or pupillary reactions or extraocular movements, 24 per cent.

Complete examination of visual fields and pupillary reactions and extraocular movements in addition to examination of conjunctivae, 2 per cent.

Of 85 physicians questioned on ophthalmoscopy, 66 per cent report that it is never done; 23 per cent perform it occasionally; and 11 per cent perform it with frequency indicated by clinical conditions.

NSPB Exhibit Reveals Early Glaucoma Cases

At least four cases of glaucoma were discovered among 149 physicians and their wives tested during a National Society demonstration at the annual meeting of the American Academy of General Practice in St. Louis, March 25-28.

The exhibit and demonstration were held to encourage the family doctor to check routinely for glaucoma in examining persons over 40. Dr. Bernard Becker, head of the department of ophthalmology at Washington University, and a member of NSPB's Missouri Committee, and Dr. Willis S. Knighton, chairman of the NSPB Committee on Glaucoma, coordinated the testing, which included ophthalmoscope, Harrington-Flocks Multiple-Pattern Field Screener and Schiøtz tonometer.

It is estimated that 1,000 persons visited the exhibit and watched the demonstrations during the four days.

Causes of Blindness in California

NEDRA B. BELLOC, M.A., DOROTHY H. FOWLER, B.A.
and WILLIAM D. SIMMONS, M.P.H.*

Report of a study made by the staff of the Prevention of Blindness Project in the California Department of Public Health on the recipients of Aid to the Needy Blind and Partially Self-Supporting Blind, as of December 1954.

THE lack of detailed information on the amount and the causes of blindness in California was one of the first problems confronting the California State Department of Public Health, when in 1954 it established a project in the prevention of blindness under a grant from the W. K. Kellogg Foundation. To overcome at least part of this lack the staff of the project undertook to gather and analyze existing data on certain portions of the State's blind population.

The largest single group of records on blind persons in California is found in the State Department of Social Welfare, which supervises the administration by the county welfare departments of aid to over 12,000 needy and partially self-supporting blind persons. Receiving aid under these programs are persons 16 years of age or older with certain income and property qualifications who meet the definition of "economic blindness."¹ This

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¹ Central visual acuity of 20/200 or less in the better eye with best possible correction, or a field defect in which the widest diameter of the visual field subtends an angular distance no greater than 20 degrees.

is a study, then, of that portion of blindness in the State which is represented in the caseloads of the two programs of aid to the blind—about half of the estimated total number of blind in California.²

The Division for the Blind of the State Department of Social Welfare cooperated with the project by making available the payrolls and the medical records upon which the study was based. The staff of the Division helped immeasurably with many problems of coding, and with locating and checking records not in file.

In order to determine whether the legal definition of blindness is met, each applicant for aid is required to file reports of eye examinations made by licensed physicians or optometrists. If the eye condition is one in which vision may improve, or if acuity is near the borderline of economic blindness, annual examinations are required. The forms provided by the Department of Social Welfare for the physician's report of the eye examination contain space for information

² Ralph G. Hurlin⁽⁸⁾ estimated the rate of blindness per 1,000 persons in California to be 1.70. This rate, applied to the State's 1955 population of approximately 13 million, yields 22,000 as the number of blind persons. Studies made by the staff of the project support a slightly higher rate.

identifying the applicant by name, sex, race, address, and date of birth, as well as recording age at onset of impaired vision, description of primary and secondary pathological conditions, etiological factor responsible for primary pathology, history of eye injury or operation, central visual acuity, and peripheral fields. The optometrist's report form is identical except that it does not provide for description of pathology and etiology.

Pathological and etiological conditions reported are coded as the reports are received in the Los Angeles office of the Division for the Blind by Dr. William A. Pettit, state ophthalmologist, using the *Standard Classification of Causes of Blindness*.³ In coding, Dr. Pettit uses the entire history of the case, as shown, frequently, in a series of examinations. Items on sex, race, date of birth, county administering aid, visual acuity, and age at onset of impaired vision were coded and transcribed by the staff of the Prevention of Blindness Project.

Included in the study were recipients of aid who received some payment according to the payrolls of December, 1954. Cancellations and supplements

made in later months for the month of December were disregarded. The study covered all recipients under 65 years of age, all of unknown age, and a 20 per cent sample stratified by county of those 65 and over⁴. Cards for the sample group were duplicated four times so that tabulated totals represent the entire case load.

In January, 1941, a similar study was made by the Department of Social Welfare of those then receiving aid to the blind.⁽⁷⁾ Where pertinent, comparisons have been made between that study and the present one.

Demographic Characteristics

In December 1954 nearly 12,500 persons were receiving aid from the programs for the needy blind and partially self-supporting blind. Of the total, slightly more than half (53 per cent) were women.

The median age of the women was 73.5 years, while that of the men was 69.4 years. Nearly two-thirds of the recipients were 65 years of age or older. The greater longevity of women is reflected here, since 68.5 per cent of them were 65 or older, while the percentage of men in the same age group was 59.6.⁵

That recipients of aid to the blind were considerably older than the population of the State is shown in Table I. Almost two out of three of the recipients were aged 65 or over, while in the State's population (over age 16) only one in eight was aged 65 or more.

Non-whites were represented among

³ Federal Security Agency. *Standard Classification of Causes of Blindness*. Part III of *Instructions to State Agencies Participating in the Study of Blindness Among Recipients of Aid to the Blind*. Washington, D. C.: U.S. Government Printing Office, 1940.

⁴ It should perhaps be pointed out that since the group of persons receiving aid is constantly changing, recipients at any one time may be considered a sample of a theoretical "universe." Errors introduced by the use of a 20 per cent sample of those 65 years of age and older are probably not much greater than the differences which would be found if all the recipients were studied at two different times. Sampling the largest group of recipients reduced by half the clerical work involved in coding and transcribing the records, and probably improved considerably the accuracy with which this part of the work was done.

⁵ In January, 1941, there were 7,290 recipients of aid to the blind in California. Fifty-four per cent of these were men. This shift from a majority of men to a majority of women occurred also in the population of the state during this period, but to a less marked degree. The median age of women recipients was 70.8 years, and of men, 65.2 years.

TABLE I
Recipients of Aid to the Blind and California Population by Age Group, December, 1954

Age Group	Recipients of Aid to the Blind						California Population* Per cent
	Number			Per Cent			
	Total	Males	Females	Total	Males	Females	
<i>Ages 16 and over.</i>	12,473†	5,855	6,611	100.0	100.0	100.0	100.0
16-24 years. . .	215	119	96	1.7	2.1	1.4	15.1
25-44 years. . .	1,149	640	508	9.2	10.9	7.6	43.3
45-64 years. . .	3,010	1,576	1,434	24.1	26.9	21.7	29.0
65 and over. . .	8,025	3,495	4,530	64.3	59.6	68.5	12.5
Not stated. . . .	74	25	43	.6	.4	.7	..
Median age, years	71.6	69.4	73.5				

* Based on estimates prepared by the State Department of Finance.

† Includes 7 with sex not stated.

recipients of aid to the blind to a greater extent than they were in the total population of the State, making up 10.7 per cent of the recipients, and 6.2 per cent of the State's population. Similarly, Mexicans (or persons with Spanish surnames) were also somewhat disproportionately represented in the aid group, where they comprised 10.8 per cent of the total, as compared with 6.1 per cent of the State's population. (These comparisons are made with the State population over 16 years of age, since children are not eligible for aid to the blind.)

Negro recipients of aid to the blind were considerably younger than whites. Eighteen per cent of the Negroes were under 45 years of age as compared with 10 per cent of whites, while 46 per cent of Negroes were 65 years or older, as compared with 68 per cent of whites. Mexicans and those classified as other races were also somewhat younger than whites, while the age distribution of Indians followed closely that of whites.

Causes of Blindness

The standard system developed for classification of causes of blindness by

the Committee on Statistics of the Blind, sponsored jointly by the American Foundation for the Blind and the National Society for the Prevention of Blindness, makes use of three main items of information in each instance: the site of the pathological condition in the eye which prevents or reduces sight; the type of condition (such as inflammatory, congenital, degenerative); and the underlying causal condition or etiology. In applying the classification the first two items are combined.

While the medical reports which were used in this study contained descriptions of secondary as well as primary conditions, for practical reasons this analysis is limited to primary conditions. Thus, secondary cataracts and secondary glaucomas are not included.

Table II shows the cross-classification of the cause of blindness in the 12,049 persons for whom medical reports were available. This table deals with total eyes, while later tables relate to the cause of blindness in the last eye to go blind.

Cataracts made up by far the largest type of affection, over one-quarter

TABLE II
Etiological and Pathological Classification of Causes of Blindness in 12,049 Recipients of Aid to the Blind*

Etiology	Pathology (numbers in parentheses are codes from the Standard Classification of Causes of Blindness)																	
	Glaucoma (110)	Refractive Errors (121-129)	Structural Anomalies (140-149)	Degenerative Changes (150-159)	Keratitis (310-340)	Pannus (350)	Other Affections of the Cornea (360-390)	Iris Affections (410-490)	Cataract (510)	Retinitis (620)	Chorioretinitis (630)	Detached Retina (640)	Retinal Degeneration (660)	Arteriosclerotic Disease of Choroid and Retina (670)	Other Affections of Choroid and Retina (610, 650, 680, 690)	Optic Nerve Atrophy (710)	Other (720-990)	
Total Eyes.....	24,098	3,271	1,201	318	463	897	485	447	651	6,841	1,082	1,257	192	1,764	1,853	93	2,503	780
Infectious Diseases.....	2,430	..	..	126	418	475	80	91	7	15	198	1	5	2	3	933	76
Syphilis.....	1,145	..	..	3	134	..	1	19	6	6	116	..	4	2	..	849	5
Ophthalmia Neonatorum.....	136	..	..	38	50	..	25	3	..	..	2	..	..	..	..	..	18
Trachoma.....	569	..	..	82	463	16	2	..	..	..	..	..	..	..	..	..	6
Tuberculosis.....	87	..	..	10	17	12	2	30	..	4	9	..	1	..	2	..	..
Meningitis.....	90	..	..	19	2	..	1	3	1	2	11	..	..	..	..	1	..
Measles.....	99	..	..	7	59	..	11	2	..	2	6	..	..	..	..	37	13
Other.....	304	..	..	49	74	..	24	32	..	1	54	1	..	..	1	40	6
Trauma and Poisonings.....	1,634	46	..	2	239	91	4	135	235	2	65	64	8	..	28	220	340	
Neoplasms.....	165	..	..	1	2	..	2	1	..	..	..	..	..	..	..	142	17
General Diseases.....	3,465	..	..	15	25	..	..	41	120	879	74	7	169	1,835	34	159	105
Diabetes.....	1,020	2	..	..	..	..	..	5	116	853	12	6	10	2	14	..	..
Vascular Diseases.....	2,174	..	..	..	..	..	..	..	..	18	42	1	159	1,831	8	57	57
Diseases of Central Nervous System.....	136	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Other.....	135	..	..	14	25	..	..	36	4	8	18	..	..	2	12	92	42
Prenatal Origin.....	1,279	80	55	273	3	2	24	3	512	4	28	3	90	..	5	154	6	
Etiology Undetermined, or Unknown to Science.....	15,125	3,143	1,146	43	79	359	6	206	360	5,967	182	892	117	1,492	16	23	895	199

* Those for whom Etiology and Pathology reports were available.

of the cases being so classified. Among these about $7\frac{1}{2}$ per cent were congenital and another 3 per cent were due to trauma. Most of those remaining were of unknown etiology. The second largest group was glaucoma, and most of these also were of unknown origin, less than $2\frac{1}{2}$ per cent being congenital, and about $1\frac{1}{2}$ per cent due to trauma. Conditions for which the etiology was undetermined or unknown to science made up nearly two-thirds of the total, with cataract and glaucoma accounting for over half of these.

Primary Pathology

When the cases were grouped by present age some interesting shifts occurred in the relative importance of various causes⁶. Congenital conditions made up a large proportion of the causes in the younger age groups, and became less important with advancing age. This is shown in the decreasing percentages with structural anomalies and retinal degeneration. Optic nerve

⁶ Consideration was given to the analysis of these data by calculating rates for the different age, sex, and ethn racial groups. This method was not used for two reasons: first, the determination of a suitable and accurate population base would be difficult, if not impossible. The population of the state at the time of the survey would not be suitable because residence of five of the nine years immediately preceding application is an eligibility requirement. An approximation of the eligible population might be made by taking the Census population of 1950 and subtracting deaths that occurred up to the time of the survey. Death statistics are not available for Mexicans, however, and this procedure overlooks any emigration from the state which may have taken place. Secondly, even if a suitable population base were developed, rates would not reflect the true propensities of the various age, sex, and ethn racial groups to blindness. Included in these rates would be the variation in economic status of the various groups, which causes some to be more likely to receive aid than others. For these reasons the analysis has been limited to proportions within each group.

atrophy accounted for nearly 20 per cent of the cases under 65 years of age, and less than 6 per cent in the age group 65 and over. Conversely, cataracts were given as the cause of blindness in less than 20 per cent of the cases under 65, but made up 35 per cent of those 65 and over. Glaucoma was named in a little over 6 per cent of the cases under 45 years of age, increased to 11 per cent in the 45 to 64 age group, and made up 16 per cent of the cases over 65. Arteriosclerotic disease of the choroid and retina became the third leading cause in the age group 65 and over. Cataract was one of the three leading causes in each age group.

Table III presents the breakdown of cases by primary pathology of the last eye to go blind by ethn racial origin of the recipients in the 1954 study, and compares the distribution of causes in 1954 with that in 1941.

The distributions by ethn racial origin have been adjusted to the age distribution of all cases, so that differences are not due to the higher proportions of younger ages in some ethn racial groups. Glaucoma was the cause of blindness in 30 per cent of Negro recipients as contrasted with 12.7 per cent of whites and 5.1 per cent of Indians. Affections of the lens (predominantly cataracts) made up 40 per cent of the cases among Mexicans and only a little more than 25 per cent of the other groups. The high proportion of glaucomas among the Negroes is not proof that this disease has a higher incidence among Negroes than among whites. If it is a condition which is associated with low economic status, one might expect to find it more prevalent among Negro recipients than among whites. On the other

TABLE III

Percentage Distribution of Recipients of Aid to the Blind by Primary Pathology of Last Eye to Go Blind, January 1941, and December 1954, and by Ethnoracial Origin (age adjusted), December 1954

Standard Classification 1954	Primary Pathology	All cases		Ethnoracial Origin—1954 cases age adjusted				
		1941	1954	White	Mexican	Negro	Indian	Other
	Total.....Number Percent	7,290 100.0	12,049 100.0	100.0	100.0	100.0	100.0	100.0
110	Glaucoma.....	11.7	13.7	12.7	11.2	30.4	5.1	10.8
121-128	Refractive errors.....	3.8	5.0	5.5	4.6	1.4	9.2	4.7
141-149	Structural anomalies.....	1.0	1.3	1.3	2.3	.7	..	..
310-390	Corneal affections.....	11.0	7.4	7.5	6.6	5.9	24.1	2.6
310-340	Keratitis.....	4.5	3.7					
350	Pannus.....	2.6	2.0					
360	Ulceration and vascularization.....	*	.2					
380-390	Other.....	3.8	1.5					
410-490	Iris and Ciliary Body.....	3.9	2.7	2.4	2.8	4.4	11.0	5.0
410	Iritis.....	*	.2					
420	Iridocyclitis and uveitis	*	2.1					
430-490	Other.....	*	.4					
510-590	Crystalline lens.....	33.0	29.0	28.6	35.9	27.0	26.1	26.8
510	Cataract.....	32.8	28.7					
520-590	Other.....	.2	.3					
610-690	Choroid and retina.....	16.0	26.2	28.5	16.4	14.3	5.3	33.6
610	Choroiditis.....	*	.1					
620	Retinitis.....	2.5	4.5					
630	Chorioretinitis.....	10.7	5.3					
640	Detached retina.....	.7	.8					
660	Retinal degeneration...	1.5	7.4					
670	Arteriosclerotic disease of choroid and retina.	*	7.9					
650, 680- 690	Other	.6	.2					
710	Optic nerve atrophy.....	13.0	10.5	9.6	13.2	14.1	17.9	16.0
Residual	Other.....	6.6	4.1	4.0	7.0	1.7	1.4	.4

* This classification not used in 1941.

hand, it should be pointed out that in California the Mexican population occupies a generally lower economic status than the white, and the proportion of cases of glaucoma among the Mexicans was about the same as the whites.

Comparison of the major categories of causes in 1954 with those in 1941 shows one striking increase in the 14-year period: affections of the choroid

and retina increased from 16 per cent to 26 per cent. Although the sub-classifications are not strictly comparable, it is probable that most of this increase was in conditions associated with age, such as arteriosclerotic disease. The percentage of cataracts decreased slightly among these recipients of aid, in spite of the increase in the median age of the group, probably because of the sight restoration pro-

gram of the Department of Social Welfare, by which persons with operable cataracts receive surgery.⁽¹⁴⁾

Etiology of Blindness

Of greater importance than pathology in a preventive program is the etiological factor responsible for the blindness. The classification system used in Figure 1 and the following tables divides the cases of known etiology into five groups: infectious diseases, trauma and poisonings, neoplasms, general diseases (not elsewhere classified), and prenatal origin. Subdivisions of infectious diseases and general diseases provide valuable detail.

In almost two-thirds of the cases, 63.4 per cent, etiology was unknown. Many of these were cataract and glaucoma cases, the former accounting for 25.2 per cent of the total case load, the latter for 13.2 per cent, leaving exactly one-quarter of the cases of other unknown etiology.

The general diseases (as distinguished from infectious) were responsible for 14.6 per cent of the blindness in this study. Noteworthy among these were the vascular diseases, which made up 9.2 per cent of the total, and diabetes, which comprised 4.3 per cent. Each category of general diseases accounted for a larger proportion of women than of men. Diabetes, for example, was given as the cause of blindness in over 6 per cent of the women, but only 2.3 per cent of the men. This difference was especially marked in the 45-64 age group, where 11.4 per cent of the women but only 3.3 per cent of the men were said to be blind because of diabetes.

Infectious diseases, which accounted for 10.1 per cent of the blindness in the total case load, were responsible for a

slightly higher percentage of blindness among men than among women, the proportion being 11.3 per cent for the former, and 9.0 per cent for the latter. Within this classification, syphilis was the single factor which afflicted a greater proportion of men than women, 6.8 per cent as against 3.0 per cent. Here again, it was in the 45-64 age group that the difference was marked.

Trauma and poisonings, as might be expected, took a considerably higher toll among men than among women, 9.2 per cent and 3.1 per cent respectively. This was true in each age group.

Blinding conditions of prenatal origin comprised 5.2 per cent of the total cases in the study. Here again, the men were in higher proportion, for 6.1 per cent of their blindness was attributed to this cause as compared with 4.5 per cent of the women's. In the separate age groups, however, only in the group 65 and over was the proportion higher for men.

Neoplasms accounted for a relatively small amount of the total blindness among the recipients (.7 per cent), and the same proportion was found in both men and women.

Figure 1 illustrates the proportion of cases in each of the major etiological groups by sex.

The age distribution of cases within specific cause groups reflects a number of factors, including age at onset of the condition, length of life after onset, and decreasing prevalence. Figure 2 presents these distributions for the cases in eight selected etiological groups. It may be seen that almost all persons blinded by trachoma were over 45 years of age, with the majority over 65. This age distribution would

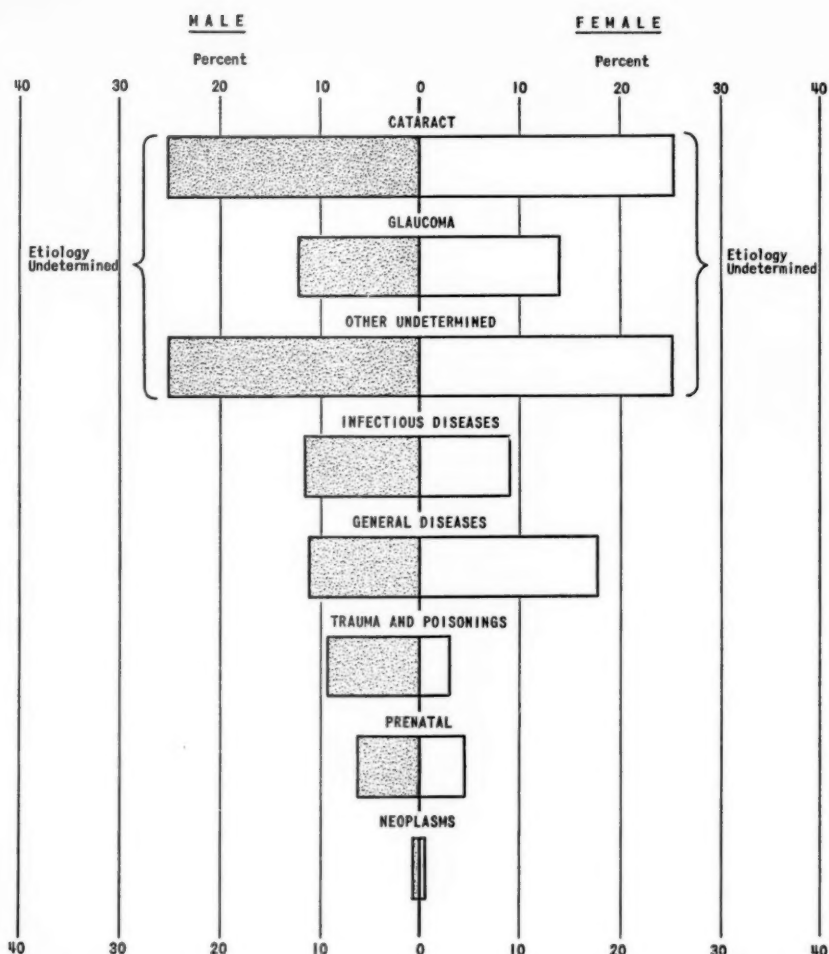


Figure 1. Percentage Distribution of Etiology of Blindness Among Recipients of Aid to the Blind by Sex

be expected for a condition which is no longer as prevalent as it once was, and which with modern medical treatment does not result in blindness. The bulk of the cases blinded by syphilis was found in the age groups between 45 and 74. It is probable that many persons blinded by this disease suffer from other effects of it which prevent their living to advanced ages.

Diabetes cases were most likely to be between 55 and 74 years of age, with 64 per cent in those two age groups. Ninety per cent of the persons blinded by vascular disease were over 65 years of age, and 70 per cent were over 75.

Those whose blindness was of prenatal origin were younger than the group as a whole, the modal age being

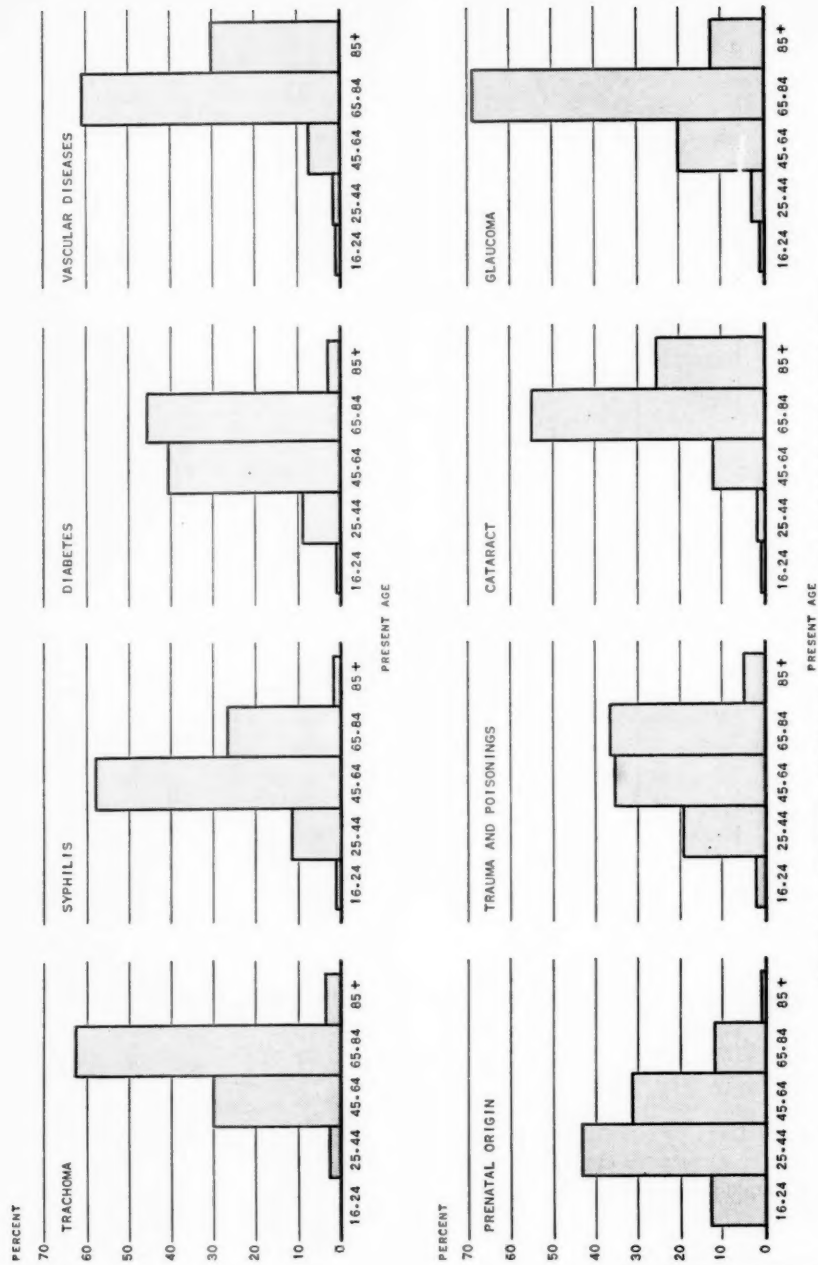


Figure 2. Age Distribution of Recipients of Aid to the Blind for Each of Eight Selected Causes
Source: Reports of Eye Examinations, Division for the Blind, State Department of Social Welfare.

25-34. There were few over the age of 75. This type of age distribution could be caused either by an increase in such conditions during the last 50 to 75 years, or by a high death rate among persons born with congenital blindness, resulting in fewer of these persons living to advanced ages.

Nearly three-fourths of the cases due to accident were found in the age groups between 45 and 84, about half of these being over and under 65.

Persons with cataracts of undetermined etiology were concentrated in the age groups over 65. Glaucoma patients were largely in the age groups between 65 and 84, but there were significant numbers who were 45 to 64.

The differences between distributions by cause are explainable largely in terms of the ages at onset⁷ of different blinding conditions. In Table IV percentage distributions are shown for each etiological group. Thirty-five per cent of the total group became blind at the age of 65 or later, and an additional 30 per cent between the ages of 45 and 64. Six per cent had been blind since infancy.

Cases resulting from syphilis occurred primarily in the age groups between 25 and 64, with nearly 80 per cent in these two groups. Ophthalmia

neonatorum, as would be expected, took its toll at birth or infancy, with 84 per cent given as under one year. Trachoma showed a surprisingly high proportion, over one-third, in the 45-64 age group, but there were significant numbers in each of the younger age groups. Over one-half of the tuberculosis cases had their onset between 25 and 44, and another one-quarter between 45 and 64. Eighty-five per cent of the meningitis cases had their onset before 25 years of age. Measles showed the expected high proportions in each age group under 25. Surprisingly, there were also a number of cases with onset after 45.

Accidents as a factor in blindness were divided about one-third under 25 years of age, one-third between 25 and 44, and one-third 45 and over. Nearly 60 per cent of the cases due to neoplasms had their onset between 25 and 64. Noteworthy was a group of 21.7 per cent with onset between 5 and 14 years of age.

Over 60 per cent of the diabetes cases had their onset between 45 and 64, and 17.5 per cent over 65. Vascular diseases showed the highest proportion, nearly three-fourths, in the age group over 65, with an additional 20 per cent in the group 45 to 64.

Nearly 60 per cent of the cases with blindness of prenatal origin reported onset during the first year of life, with 21 per cent between 1 and 25, and 17 per cent after 25 years of age.

Cataracts had their onset primarily in the age groups over 45, with nearly 87 per cent of the cases. Eighty per cent of glaucoma cases likewise were said to have begun after the age of 45, but in each age group between 5 and 45, there was a higher percentage of glaucoma than of cataracts.

⁷ The data in this study concerning age at onset are based on the item in the medical record of each recipient which asked for the age at onset of "impaired vision." Undoubtedly this has been interpreted in some instances as the age at onset of actual blindness, while in others it has been interpreted as the age at the beginning of the eye trouble. It was noticeable also in coding the data that when there were several medical records taken over a period of years there would be considerable variation in the ages given in response to this item. To simplify coding, the age at onset which was given on the last record was used. Because of the variation between different records, broad age groups were used in classifying the ages at onset.

* Excludes cases in which etiology was known which were placed in appropriate categories above.

TABLE V
Percentage Distribution of Recipients of Aid to the Blind by Etiology of Last Eye to Go
Blind, January, 1941 and December, 1954 and by Ethnoracial Origin (age adjusted),
December 1954

Standard Classification 1954	Etiology	All cases		Ethnoracial origin—1954 cases— age adjusted				
		1941	1954	White	Mexican	Negro	Indian	Other
	Total.....Number Percent	7,290 100.0	12,049 100.0	100.0	100.0	100.0	100.0	100.0
10-29	Infectious diseases.....	13.2	10.1	8.9	13.0	13.8	22.6	15.3
19	Syphilis.....	6.2	4.9	3.3	7.1	12.9	.8	13.9
20	Trachoma.....	2.7	2.4	2.6	1.1	.1	20.4	..
15	Ophthalmia neonatorum.....	.7	.6					
21	Tuberculosis.....	.3	.4					
14	Meningitis.....	.4	.4	3.0	4.7	.8	1.4	1.3
13	Measles.....	.6	.4					
Residual	Other.....	2.2	1.2					
30-59	Trauma and poisonings...	8.3	6.0	5.9	6.9	5.5	11.7	.6
60-69	Neoplasms.....	.5	.7	.8	.3	.3	..	.4
70-79	General diseases, not elsewhere classified...	5.8	14.6	15.7	10.2	6.0	.8	20.0
72	Diabetes.....	2.2	4.3	4.4	3.7	3.3	..	5.8
74	Vascular diseases.....	2.8	9.2	10.0	5.9	2.2	.8	14.3
75	Diseases of central nervous system.....	*	.6	1.3	.5	.5	..	..
Residual	Other.....	.8	.6					
80-89	Prenatal origin.....	4.4	5.2	5.8	5.5	2.8	2.8	1.6
90-99	Etiology undetermined or unknown to science...	67.8	63.4	62.8	64.0	71.6	62.1	62.1

* This classification not used in 1941.

Perhaps the most striking comparisons of the whole study are those shown in Table V, in which the distribution by etiology is given for each ethnoracial group, adjusted so that the ages within each group would be the same as for all cases. The infectious diseases accounted for a considerably smaller proportion of the blindness among the whites than among any of the other groups. This difference was largely due to the prevalence of trachoma among the Indians and syphilis in the other groups. General diseases, especially vascular diseases, as causes of blindness, took a heavier toll in the white and other non-white groups, than among the

Mexicans and Negroes. Surprisingly, cases of blindness due to these conditions were almost absent among the Indians. Whites and Mexicans had a higher proportion of cases due to prenatal conditions than the other groups. A study of recipients of aid in Illinois also found a higher proportion of blindness due to congenital conditions among whites than among Negroes.⁽⁴⁾ It is possible that the death rate of infants with congenital defects is higher among non-whites than among whites, resulting in fewer of these children reaching maturity. Those cases of congenital blindness which are due to non-venereal infection of the mother during pregnancy may

occur less frequently in those groups in the population in which an immunity to these infections is acquired early in life.

In 1941 infectious diseases accounted for 13.2 per cent of the cases, while in 1954 this proportion had decreased to 10.1, most of the decrease being due to the reduction in syphilitic blindness from 6.2 per cent to 4.9 per cent. Cases attributed to general diseases increased markedly from 5.8 per cent to 14.6 per cent, with increases in both the diabetes and vascular disease categories. At least a part of this increase was due to the increased average age of the case load. Unfortunately, data were not available from the 1941 study to permit an examination of the percentages by age group.

The percentage attributed to trauma and poisonings declined from 8.3 to 6.0, while that due to neoplasms and prenatal conditions increased slightly.

SUMMARY

This study was made by the staff of the Prevention of Blindness Project in the California Department of Public Health on the recipients of Aid to the Needy Blind and Partially Self-Supporting Blind as of December, 1954. Medical and payroll records were made available by the Division for the Blind of the State Department of Social Welfare. Included were all recipients under 65 years of age, and a 20 per cent sample of those 65 and over.

Almost two-thirds of the recipients were 65 years of age or over. Slightly more than half were women. There were proportionately more Negroes and Mexicans in this study than in the State's population as a whole. The non-white recipients were, as a group, younger than the white.

Thirty-five per cent became blind at the age of 65 or later, and an additional 30 per cent between the ages of 45 and 64. Congenital cases and those blind since infancy accounted for 6.5 per cent.

Cataracts were the cause of the largest proportion of cases of blindness in the group, with 28.7 per cent of the total, and in each age group cataracts were one of the two leading causes, exceeded only by optic nerve atrophy in the age groups 25-44 and 45-64. Glaucoma ranked second for the total group, with 13.7 per cent. In persons over 65 years, cataracts and glaucoma accounted for over half of all blindness. Negroes appeared to have more glaucoma than whites, while Mexicans had the highest proportion of cataracts.

The etiology of blindness was unknown in over 60 per cent of the cases, a large proportion of these being cataracts and glaucoma. General diseases, the most important of which were vascular diseases and diabetes, made up 15 per cent of the total. These were most prevalent among the older age groups of white stock, while infectious diseases were important causes of blindness among the younger-aged Mexicans, Negroes, and Indians. Infectious diseases accounted for 10 per cent of the total, accidents for 6 per cent, and prenatal conditions for 5 per cent.

Comparison with a similar study in 1941 showed a decrease in the percentages due to infectious diseases and accidents. A decrease in the percentage due to cataracts may be attributed to the active sight restoration program of the Department of Social Welfare. There was a slight increase in the proportion due to glaucoma, and a marked increase in the cases whose origin was vascular dis-

ease or diabetes. These latter changes may be due in part to the increased average age of the group.

CONCLUSION

This study bears out the findings of other studies that infectious diseases and accidents are decreasing in importance as causes of blindness, while the so-called degenerative diseases are accounting for a larger proportion of the cases. Cataracts, glaucoma, vascular diseases, and diabetes will undoubtedly continue as the major causes of blindness. Since the principal target of these conditions is the older age groups, it is to be expected that the increasing proportion of our population over the age of 65 will result in an increasingly large number of blind persons.

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TABOOS STILL EXIST

Cotton Mather did not approve medical aid to people with syphilis, because in his day that disease and other diseases were "God's punishment for man's sin." But we do not have to go that far back. In some parts of the world there are religious taboos against the prevention of trachoma, a serious infectious disease of the eyes. When the bill was up before the State Legislature in Springfield, Ill., to require the instillation of dilute silver nitrate into eyes of every newborn child in our state, to prevent infantile blindness from venereal eye infection from the infected mother, a citizen committee came and asked me to go with them to Springfield and help them to defeat the bill. They told me: "There is no such disease as syphilis and gonorrhea, that is all in the imagination."

A. J. CARLSON, M.D. "Science Versus Life."
Journal of the American Medical Association,
April 16, 1955.

Revision of the Standard Classification of the Causes of Blindness

BETWEEN the years 1920 and 1930 statistical studies of the causes of blindness based on diagnostic information from the records of persons receiving aid to the blind were made in three states—Missouri, Colorado and Illinois. In 1924 Drs. Conrad Berens and LeGrand H. Hardy, with a grant from the National Society for the Prevention of Blindness, also made a statistical study of the causes of blindness, their study being based on ophthalmic diagnoses of patients at New York Eye and Ear Infirmary. Unfortunately, the data of these and other similar studies could not be combined or effectively compared because each study used a different scheme of classification of causes.

In 1930 the American Foundation for the Blind and the National Society for the Prevention of Blindness jointly appointed a Committee on Statistics of the Blind and requested that it study the problems of statistics relating to blindness and make recommendations for the improvement of such statistical data. The members of the Committee were Conrad Berens, M.D., Lewis H. Carris, Ralph G. Hurlin (Chairman), Robert B. Irwin, C. Edith Kerby, Evelyn C. McKay, Bennet Mead, B. Franklin Royer, M.D., and Stetson K. Ryan. Among the early accomplishments of this Committee was the drafting of a scheme of classification of causes of blindness which distinguished, and utilized separately, the two elements of the complete diagnosis of an abnormal eye condition, namely, the pathological information concerning

the site and nature of the condition and information concerning the etiological or underlying causal factor. The Committee recommended adoption of the twofold classification as a means of obtaining comparable information from studies made at different times and different places, and also as a means of increasing and systematizing statistical information concerning known etiological factors, for which there was, and still is, great need for use in formulating and administering programs for prevention of blindness.

The Committee made immediate use of its classification by initiating a series of annual compilations of statistics of the causes of blindness among children in schools and day classes for the blind. The first of these studies provided statistics for the school year 1932. These compilations have been continued for subsequent years at the National Society for the Prevention of Blindness under the direction of Miss C. Edith Kerby.

In first publishing the proposed standard classification, the Committee recognized that its plan would require reconsideration and revision from time to time. In 1940 the Bureau of Public Assistance of the Federal Security Agency adopted the classification for use in a series of statistical studies of causes of blindness to be made under its auspices by state agencies administering aid to the blind which were able and willing to participate. In preparation for this series of studies, the Committee on Statistics of the Blind made its first revision of the classification, and issued a manual to assist in its use.

The classification was adopted in principle by the Pan American Association of Ophthalmology in 1948, and by the International Association for the Prevention of Blindness in 1950.

Because of new knowledge concerning some eye conditions causing blindness, and especially because of the desirability of including in the list of specified causes some which, though not frequent in this country, are of great importance elsewhere, a further revision of the classification has recently been made. In reexamining the plan for this revision, the Committee on Statistics of the Blind has corresponded with interested ophthalmologists in numerous countries, inviting them to propose needed changes in the

classification. The Committee wishes to acknowledge the receipt of many helpful responses to this invitation, and particularly the advice of Arnold Sorsby, M.D., who over many years has engaged in statistical studies of the causes of blindness in Great Britain. The revised classification as adopted by the Committee is presented in the following pages.

The present members of the Committee are: M. Robert Barnett, Conrad Berens, M.D., Virginia S. Boyce, Gabriel Farrell, Franklin M. Foote, M.D., Marta Fraenkel, M.D., Trygve Gundersen, M.D., Ralph G. Hurlin (Chairman), Nathaniel J. Raskin, and Carl E. Rice, M.D.

Standard Classification of Causes of Blindness

1957 Revision

I—BY SITE AND TYPE OF AFFECTION

EYEBALL IN GENERAL

- 110 Glaucoma (excluding infantile)
- 130 Panophthalmitis and acute endophthalmitis
 - Structural anomalies:
 - 140 Malignant myopia
 - 141 Albinism
 - 142 Anophthalmos (excluding surgical)
 - 143 Megalophthalmos (infantile glaucoma)
 - 144 Microphthalmos
 - 145 Aniridia
 - 146 Coloboma, any part (excluding surgical)
 - 147 Multiple structural anomalies
 - 148 Other structural anomalies, specified
 - 149 Structural anomaly, not specified
 - General degenerative changes:
 - 151 Disorganized eyeball (atrophic globe, phthisis bulbi)

- 158 Other general degenerative change, specified
- 159 General degenerative change, not specified
- 180 Other general affection of eyeball, specified
- 190 General affection of eyeball, not specified

CORNEA

Keratitis:

- 311 Interstitial keratitis
- 312 Phlyctenular keratitis (keratoconjunctivitis)
- 313 Ulcerative keratitis
- 314 Sclerosing keratitis
- 315 Hypopyon with keratitis
- 318 Other keratitis, type specified
- 319 Keratitis, type not specified
- 320 Corneal dystrophy, degeneration
- 330 Megalocornea

- Vascularization:
- 351 Vascularization with ulceration
 - 352 Vascularization without ulceration
 - 359 Vascularization, ulceration not specified
 - 360 Keratomalacia
 - 370 Keratoconus
 - 380 Other affection of cornea, specified
 - 390 Affection of cornea, not specified

CRYSTALLINE LENS

- 410 Cataract
- 420 Dislocated lens
- 480 Other affection of lens, specified
- 490 Affection of lens, not specified

UVEAL TRACT

- 510 Iritis
- 520 Iridocyclitis and uveitis
- 530 Kerato-iritis
- 550 Choroiditis
- 560 Chorioretinitis
- 580 Other affection of iris, ciliary body or choroid, specified
- 590 Affection of iris, ciliary body or choroid, not specified

RETINA

- 610 Retinitis or retinopathy
- 620 Retinal hemorrhage

- 630 Retrolental fibroplasia, retinopathy of prematurity
- 640 Detached retina
- 650 Retinitis pigmentosa
- 660 Macular degeneration
- 670 Other retinal degeneration
- 680 Other affection of retina, specified
- 690 Affection of retina, not specified

OPTIC NERVE, OPTIC PATHWAY, AND CORTICAL VISUAL CENTERS

- 710 Optic nerve atrophy
- 720 Optic neuritis (papillitis)
- 730 Papilledema (choked disc)
- 740 Neuroretinitis
- 750 Retrobulbar and intra-cranial lesions
- 780 Other affection of optic nerve, specified
- 790 Affection of optic nerve, not specified

VITREOUS

- 810 Vitreous hemorrhage
- 880 Other affection of vitreous, specified
- 890 Affection of vitreous, not specified

SITE NOT SPECIFIED

- 980 Ill-defined lesion, specified
- 990 No report on site and type of affection

II—CLASSIFICATION BY ETIOLOGY

INFECTIOUS DISEASES

- 11.0 Diphtheria
- 12.0 Gonorrhea, excluding ophthalmia neonatorum
- 13.0 Measles
- 14.0 Meningococcal meningitis

Ophthalmia neonatorum:

- 15.1 Gonorrheal
- 15.8 Other infection, specified
- 15.9 Type of infection not specified

- 16.0 Scarlet fever
- 17.0 Septicemia
- 18.0 Smallpox

Syphilis:

- 19.1 Prenatal syphilis
- 19.2 Syphilis acquired after birth
- 19.9 Pre- or postnatal syphilis not specified
- 20.0 Trachoma
- 21.0 Tuberculosis

- 22.0 Typhoid fever
- 23.0 Rubella
- 24.0 Onchocerciasis
- 25.0 Toxoplasmosis
- 26.0 Brucellosis
- 27.0 Leprosy
- 28.0 Other infectious disease, specified
- 29.0 Infectious disease not specified

TRAUMA

- 30.0 Chemical causing burn

Radiation:

- 31.1 Infrared
- 31.2 Gamma
- 31.3 Neutron
- 31.9 Type not specified
- 32.0 Other object or substance causing burn
- 33.0 Firearm using explosive
- 34.0 Airgun, slingshot, etc.
- 35.0 Fireworks (any type)
- 36.0 Other explosive
- 37.0 Sharp or pointed object
- 38.0 Blow or fall
- 39.0 Foreign body in eye
- 48.0 Other agent or source, specified
- 49.0 Agent or source not specified

POISONINGS

- 51.0 Methyl alcohol
- 52.0 Dinitrophenol
- 53.0 Lead
- 54.0 Quinine
- 55.0 Excessive oxygen
- 58.0 Other poison, specified
- 59.0 Kind of poison not specified

NEOPLASMS

- 61.0 Retinoblastoma
- 62.0 Melanosarcoma
- 68.0 Neoplasm, other types specified
- 69.0 Neoplasm, type not specified

DISEASES not elsewhere classified

- 71.0 Anemia and other blood disease

- 72.0 Diabetes mellitus
- 73.0 Nephritis and other kidney disease
- 74.0 Vascular disease (including arteriosclerosis and other cerebro-vascular lesions)
- 75.0 Multiple sclerosis
- 76.0 Disease of pregnancy
- 77.0 Nutritional deficiency
- 78.0 Other diseases not elsewhere classified, specified
- 79.0 General disease not elsewhere classified and not otherwise specified

PRENATAL INFLUENCE not elsewhere classified

- 81.0 Genetic origin, established by family history
- 82.0 Genetic origin, presumed
- 89.0 Prenatal influence, cause not specified

ETIOLOGY UNDETERMINED or NOT SPECIFIED

- 91.0 Unknown to science
- 92.0 Evidence insufficient for diagnosis
- 99.0 No report on etiology

SUPPLEMENTARY CLASSIFICATION FOR CASES RESULTING FROM TRAUMA OR POISONING BY TYPE OF ACTIVITY AT TIME OF INJURY

- .00 Birth process
- .01 Occupational activity
- .02 Household activity
- .03 Play or sport
- .04 Traffic or travel
- .05 Military activity
- .08 Other activity, specified
- .09 Activity not specified

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NOTES AND COMMENT

• Vision Screening in Oregon

Plans for a county-wide vision screening pilot study of three- and four-year-old children have been announced by the Oregon State Board of Health.

The survey, aimed primarily at the detection of eye muscle imbalance and suppression, will be conducted as a joint program by the State Board of Health and the Douglas County Health Department, Medical Society, and ophthalmologists. Dr. Thomas M. Colasuonno, director of the Board's Vision Conservation section, will serve as coordinator.

Citing the apparent lack of accurate data on the prevalence of impaired vision of three- and four-year-old children, Dr. Colasuonno said he hopes the study "may bring to light a satisfactory method of group vision screening and indicate the prevalence of muscle imbalance at this age." He estimated between 800 and 1,000 children will be involved in the four-month study.

• Human Tears

Using an electrical apparatus Robert Brunish, a Los Angeles researcher, has made a study of tears obtained from persons ranging in age from six months to 50 years. The quantity of tears secreted during emotional stress was found to be much greater and contained more albumin than that produced by irritants such as onion vapors. Three protein components have been identified in normal tears; albumin, lysozyme and globulin.

Brunish, a member of the department of physiological chemistry at the

University of California Medical Center, reports his studies in *Archives of Ophthalmology* for April.

In another research project, Dr. Olive Fedde Erickson, clinical instructor in ophthalmology at Stanford Medical School, San Francisco, has found evidence that the contents of tears differ in health and disease. *Today's Health* for April reports that Dr. Erickson will first investigate tear changes in glaucoma, arthritis and rheumatic fever. Studies of mental disease and hormonal upsets will follow.

• Compensation Granted

A case involving loss of vision due to exposure to excessive light is reported in *Safety Maintenance* for April 1957. In a Mississippi court substantial evidence for a compensation claim was found.

"A cutter, employed by a shipbuilding company, was properly awarded compensation for total disability due to loss of vision where the evidence was sufficient to sustain the findings that the repeated exposure to excessive light from the torch used in cutting was an accidental injury arising out of his employment. The employer contended that the claimant did not suffer an accidental injury out of his employment because there was no specific event definite as to time and place; that there was no trauma, no force, no sudden mechanical or structural change, or unexpected breaking of the internal structure of the body. The court ruled that taking the testimony as a whole, from the expert and lay witnesses, there was substantial evidence that the claimant's cataracts



Drawing by Soglow. © 1956, The New Yorker Magazine, Inc.

were either caused by the absorption of radiant energy and infra-red rays, or that the cataracts were aggravated by such an absorption so as to accelerate the onset of his disability. Affirmed."

• Los Angeles Program

Last year Los Angeles school physicians gave 231,601 children routine physical examinations and found that 212,004 of them needed further medical attention. Of this number 17,908 had visual defects; another 3,638 pupils were found to be suffering from eye diseases. Many of the health problems, especially the more severe ones relating to vision, hearing, and malnutrition, as well as dental, nervous and emotional disorders were found to be affecting the child's educational progress and classroom behavior.

Teachers were instructed to report all children who showed indication of visual trouble. Special attention was given to pupils with reading difficul-

ties. In most cases referrals were made to family physicians through the parents. Those unable to afford private care were referred to community health centers.

Through thousands of parent conferences excellent cooperation was developed in obtaining correction of defects and improvement in health habits.

• Ternstedt's Record

No serious eye accidents have occurred among the 6,000 employees of the Trenton, New Jersey, plant of General Motors Ternstedt Division since the expansion of its safety measures, according to an article in the *Journal of the American Optometric Association* for September 1956. All employees wearing prescription lenses may have their safety eyewear made up at the company's expense. During the six months this program has been in operation, 500 employees have been provided with prescription safety glasses.

The plant maintains an eye room where safety engineers trained by eye specialists fit plano type glasses so that they can be worn comfortably. All eye protection devices are dispensed, repaired and sterilized in this room. The doctor and seven nurses on the staff conduct vision screening tests, but give no evaluations and refer all persons with defects to their own doctors.

Machine guards offer first-line protection to the eyes. Illumination is regularly checked with a light meter, and each piece of equipment or machinery has its own operation light.

During the last ten years the plant had 1,100 major eye injuries which cost \$16,000 for medical and compensation expenses. The last part of this period reflected recent improvements by diminishing accidents, and in 1955 accident costs reached zero.

• Ordeals of the Newly Seeing

To a child blind from birth the first experience of sight can be painful and terrifying, Dr. Guy Dingemans of France says in an article in the *Indian Red Cross Journal* for June 1956. During a visit to the Institute of the Blind in Caracas, Venezuela he observed a group of children who had received surgery for congenital cataracts and were seeing for the first time.

Dr. Dingemans watched a nine-year-old boy whose bandages had just been removed. "He appeared to be drunk. He pressed his hands against his head as if he were suffering from an intolerable irritation and moved his arms in front of his face as if to protect himself against some frightful ghosts. He threw himself on the ground and tried to grip the floor like an Alpinist clutching a rock face so as to stop himself from slipping into the void. When-

ever one showed him strongly lighted or colored designs he was thrown into a panic. He had to be returned to his old blind world for quite a long time."

These children had to learn how to see. They fingered various objects while looking at them, and then tried to recognize them without the help of touch. They learned fairly soon to identify objects nearby, but lacking experience of the third dimension they were confused by distant images.

Questioned about their first visual impressions, most of them said they felt as if foreign bodies had invaded their heads, which swelled into a mass of which nearby objects were a part. Slowly they managed to detach themselves from the surround, in a curious way: the body became a small doll lost inside a bell-shaped vessel from which near objects were suspended like a living extension of the body. They were surprised to find that they could not move an object in front of them without touching it.

The visual world disappointed them. They had no sense of the beauty of forms and colors.

"Such observations," Dr. Dingemans writes, "bring us to the mysterious problem of the 'creation of light' within the conscious part of our brain." The normal child learns gradually to differentiate visible light falling on the retina into colors, forms, perspectives. These newly-seeing children felt only the chaos of nerve stimulation on the retina, which the brain was as yet powerless to complete as the experience of seeing.

Reprints of *The Treatment of Trachoma* by Phillips Thygeson, M.D., from the Spring Issue of SIGHT-SAVING REVIEW, are available from NSPB, Pub. 293, price 5 cents.

FIRST AID FOR ACID BURNS OF THE EYE

QUESTION: Since Victor Riesel was blinded with acid thrown on April 4, 1956, I have read of several other instances of acid throwing. For the benefit of anyone who might be involved in such cases why don't you outline the first aid care that should be given, which so often has saved sight following industrial explosions involving acid?

ANSWER: When acid or any other strong chemical touches the eye it is urgent that the eye immediately be washed with large quantities of water. In his article in the *Saturday Evening Post*, September 15, 1956, Victor Riesel said he regretted that bystanders stopped a Good Samaritan from pouring water into his eyes. He pointed out what Dr. Bonaccolto, Director, Eye Department, St. Clare's Hospital, had emphasized to him during his hospitalization: that one should "pour water into the eyes, and pour, pour, pour. Put the victim flat on his back. Pour water into his eyes constantly."

Dr. G. Bonaccolto has pointed out that pain and lid spasm in chemical burn cases are intense. Therefore one person should try to hold the eyelids open, exposing the cul de sac, while another washes out the acid. No time should be wasted in looking for a neutralizing agent. He adds:

"If water is available, don't stop at one glassful, but keep on pouring in the water repeatedly so that some of it can flush the fornices. If water is not immediately available, make use of any non-alcoholic beverage, not worrying so much about the possibility of infections since today any specialist can well take care of these later."

As soon as possible, of course, one gets a patient with a chemical eye burn under the care of an ophthalmologist. In industry, while waiting for ophthalmological care, a plant physician, or nurse when authorized, will anesthetize the eye to make irrigation easier and will continue to irrigate the eye with lukewarm sterile water or with physiological saline solution.

1958 NSPB CONFERENCE

The 50th anniversary of the founding of the National Society for the Prevention of Blindness will be celebrated at its next annual conference, to be held in Philadelphia, March 12-14, 1958. The headquarters will be the Bellevue-Stratford Hotel. It is suggested that those who plan to attend make their reservations directly with the hotel well in advance.

EFFECTS OF X-IRRADIATION

The School of Aviation Medicine recently conducted a study at Randolph Air Force Base, Texas, to determine the effects of high intensity x-irradiation on the eye. Forty-five rabbits received 6,000r of x-irradiation to the eyes; 45 others were used for non-irradiated controls. Five animals of each group were sacrificed at various time intervals and their eyes carefully prepared for histological, histochemical and chemical studies.

Degenerative changes in the outer nuclear layer of the retina, fragmentation of the visual cell layer and increased glycogen content were noted in animals four hours after irradiation and in all subsequent groups thereafter.

EYE FACTS—Eye accidents among children occur most frequently during unsupervised play or sports; and boys account for three out of four of the injured.

AROUND THE WORLD

AUSTRALIA

Progress and Problems. J. Ringland Anderson presents an Australian viewpoint on blindness and its prevention in *International Record of Medicine* for March 1957.

Citing recent examples of reduced incidence of blindness he mentions the 192 blind pensioners in Queensland in 1937, of whom 15 per cent suffered from lead poisoning, the majority losing their sight before they were eight years old. Restrictions on the use of lead in paint accessible to children have eliminated this hazard.

Dr. Anderson reports that according to various studies glaucoma caused 20.5 per cent blindness among private patients in Victoria, 12.4 per cent in Tasmania, 2.6 per cent in Kimberley district (where 24 per cent of those examined were Caucasians), and one per cent in New Guinea. Vascular disease accounted for 9.5 per cent of binocular and 15.5 per cent monocular blindness in Victoria. In Tasmania, where there is a slower pace of living, the figures were 6.0 and 5.2 per cent respectively.

EGYPT

Children as Campaigners. A pilot project sponsored by the World Health Organization in cooperation with the Egyptian Government and UNICEF aims at complete control of trachoma in the area of Qualiub. This program includes an intensive sanitation campaign, fly control, and health education of parents, community leaders, teachers and children.

A group of 5,000 children of pre-school age is given sulfa drugs over a

period of several days before the seasonal outbreak of acute eye infections is expected. Antibiotic ointment is used to treat about 3,500 school children twice daily for 60 days. In each of a number of selected villages groups of about 100 children each are followed up to provide precise information as to the value of the methods used.

Hundreds of children in Egyptian schools now proudly wear round metal badges on their shirts, indicating that they have been selected to serve on their school health committees. Their duty is to inspect fellow-pupils and schoolrooms for cleanliness. They have also been trained to apply antibiotic ointment to the eyes of their classmates. Their enthusiastic support does much to insure success of the project.

GREAT BRITAIN

Vision of Schoolchildren. The chief medical officer of the Ministry of Education reports, according to *The Optician*, that at periodic medical inspections 109,956 children in 1954 and 110,452 in 1955 were found to require treatment for defective vision, excluding squint.

Special investigations have shown that three per cent of all five-year-olds just starting school require glasses, emphasizing the need for early testing of vision. About 60,000 children were found with squint in 1955, and the great majority are under treatment.

Eyes and Superstition. There are still many people who harbor quaint notions about the eyes, writes L. Cowan in *The Optician* of January 11, 1957. He cites the case of a woman who recently visited his office with an

"exceptionally bonny baby" in her arms.

"I remarked 'What beautiful eyes' it had," he continues. "About three weeks later it became ill. One can judge my amazement on being accused as the person responsible. There was nothing in the handbook of ophthalmic medical practitioners and ophthalmic opticians to guide me as to the proper course to take in such a case. I confess that I feared for my practice."

Dr. Cowan reminds us of the passage in Grimm's Fairy Tales, that tells how to recognize a witch.

"When you looked at her eye you saw your image upside down. This was caused by the evil characteristics of her eyes."

MOROCCO

Tradition vs. Modern Medicine. The joint campaign of the Sherafian Government with aid from WHO and UNICEF against trachoma in southern Morocco began in 1953. The tribes that inhabit these regions are proud of their origin and most reserved, which makes doubly difficult the task of overcoming their ignorance and reluctance to submit to medical advice and treatment.

Polygamy is well established and women spend most of their lives in separate enclosed areas, supervised by "matrons." The persistence and persuasion of official nurses has finally broken down some of the resistance to general hygiene and health instruction. Women carrying infants will now come to the health stations and have their offspring treated with the "golden antibiotic aureomycin," which deals effectively with the acute form of conjunctivitis, of which there are epidemics every summer.

As a result of this treatment and the application of silver nitrate at birth many more young eyes are now healthy.

PHILIPPINES

New Compounds Dangerous. A warning against some of the new combinations of antibiotics and anti-inflammatory hormones is issued by Dr. Geminiano de Ocampo in the *Journal of the Philippine Medical Association* for October 1956. These preparations are issued by the leading pharmaceutical houses in the United States and recommended for external ocular infections.

In 15 cases where these drugs were used by ophthalmologists or general practitioners the effect was deleterious. In three cases of keratopathy the ulcers spread with destruction of sight. A patient with punctate marginal keratopathy was relieved from pain, but the corneal involvement progressed until sight was reduced to finger counting. A case of virus keratitis resisted treatment until the cortisone application was suspended. In conjunctivitis and dacryocystitis the course was prolonged until plain antibiotic alone cleared the infection.

Dr. de Ocampo believes that these preparations have a masking effect on the inflammatory symptoms and prolong and sometimes spread the infection. When this occurs in the cornea the sight is lost. A special danger is the use of these drugs by general practitioners, or even, as happened in a few of the cases observed, by patients on their own initiative.

A teacher affects eternity; he can never tell where his influence stops.

HENRY ADAMS

CURRENT ARTICLES

Use of the Harrington Multiple-Pattern Field Screener in Industry.

L. T. Robertson. *Transactions, American Academy of Ophthalmology and Otolaryngology*. Vol. 60, p. 806. November-December 1956.

In a 12-month period the Harrington Multiple-Field Screener was used in an industrial population of 7,821 individuals and showed an over-all yield of abnormalities of approximately five per cent. The examinations were performed in mobile medical units and were part of comprehensive screening tests which included general physical examination, chest x-ray, electrocardiogram, urinalysis, audiogram and Ortho-Rater vision test. The Multiple-Field Screener portion of the examination took only two to five minutes of the allotted hour-and-a-half of examination time.

Marked differences in the percentage of abnormalities for different age groups were found as well as differences by sex. In general the incidence of abnormalities in men was twice as great as that in women; and there was a marked increase, as much as seven-fold, in abnormal findings with advancing age. Further analysis of the test showed that 25 per cent of the men and 14 per cent of the women had recognizable "pattern" abnormalities.

Unilateral versus bilateral distribution of abnormalities did not seem to be influenced by age or sex. There was, however, a greater incidence of bilaterality in the recognizable "patterns."

Procedural difficulties with large population samplings and areas for further investigation are indicated.

The Early Diagnosis of Glaucoma.

H. C. Beckett. *Transactions of the Ophthalmological Society of Australia*. Vol. 15, p. 39, 1955.

Beckett believes that the field of vision test is the most practical way to detect early cases of chronic simple glaucoma, and that it should be used routinely on all patients over 40 years of age. Examination of the temporal fields with a 2/2000 white test object takes only two or three minutes, but the author feels that it should be done only by the ophthalmologist. Since few people in Australia are ever seen by a doctor, the government should undertake a mass screening for glaucoma.

Glaucoma: A Public Health Problem.

A. B. Kurlander. *Transactions, American Academy of Ophthalmology and Otolaryngology*. Vol. 60, p. 774. November-December 1956.

Glaucoma has become a public health challenge and responsibility. Cooperation between ophthalmologists and public health authorities will result in better methods of early detection and control of the disease. Since the ophthalmologist is irreplaceable as the diagnostician, other hands must be made available to release him of much of the screening burden.

The United States Public Health Service plans to develop and encourage glaucoma detection activities through: (1) stimulating acceptance of screening as a standard element in physical examinations given in physicians' offices, hospitals, clinics, industrial medical departments or under any other circumstances; and (2) expansion of

programs of state and local health agencies through consultation, demonstration projects, and financial support. Proposals now being developed include evaluation of screening techniques, including tonometry; methods of instrument sterilization; and thorough studies of glaucoma epidemiology.

Glaucoma Records in Practice.

C. Berens, G. Z. Carter and A. S. Breakey. *American Journal of Ophthalmology*. Vol. 43, p. 253. February 1957.

A concise, clear record of a glaucoma case is of benefit to both patient and ophthalmologist. Advancing knowledge of the disease necessitates frequent changes in glaucoma records, especially in parts concerning physical and ocular findings. Several specific suggestions are made:

1. A red star in the upper right hand of the patient's chart to denote a glaucoma record and the fact that a pamphlet (see 2) has been given to the patient.
2. A glaucoma pamphlet for education of the patient.
3. A rubber-stamp form with specific spaces for data which should be recorded at each visit, covering tensions in each eye, time of day, use of drugs, and record of outflow tests, if performed.
4. A space to encourage recording of recent history and physical findings.
5. A tonometer chart for following the course of the disease at a glance.
6. Field chart with a large space for tangent screen findings.

Tonometer Calibration. Jonas S. Friedenwald. *Transactions, American Academy of Ophthalmology and Otolaryngology*. Vol. 61, p. 108. January-February 1957.

Tonometer Calibration. Empirical Validation. P. C. Kronfeld. *Transactions, American Academy of Ophthalmology and Otolaryngology*. Vol. 61, p. 123. January-February 1957.

Dr. Friedenwald's study was undertaken at the request of the Committee on Standardization of Tonometers of the American Academy of Ophthalmology and Otolaryngology.

The clinical use of the 1954 Schiötz tonometer calibration scale has revealed certain discrepancies in that scale. When paired readings are made on the same eye with two plunger loads there is a tendency for a higher pressure estimate with the heavier plunger load.

As a result of tests by Dr. Peter C. Kronfeld the extent of the discrepancies was estimated. The author presents arguments leading to the conclusion that the 1954 calibration scale for the 5.5 gm. load is essentially correct and should be disturbed as little as possible; also that the 1954 estimate of the average normal value for the ocular rigidity coefficient requires no change.

Inquiries were then made as to what changes in the empirical constants used in the curve fitting on which the 1954 calibration was based would abolish the discrepancies found in the calibration. It was found that the required adjustment could be reached by distributing the changes over five of the eleven empirical constants used in the 1954 calibration.

Dr. Kronfeld reports that in October 1955 Dr. Friedenwald submitted the above paper to the Committee on Standardization of Tonometers with a request for further empirical validation of the new scale. He specifically

asked for paired tonometric measurements with the 5.5 gm. and 10 gm. weights on eyes with high ocular tension.

The Committee felt that in its present form the 1955 scale is self-consistent to a greater degree than any of the scales in use since 1924. The 1955 scale conforms more closely with the empirical 5.5 gm. versus 10 gm. relationship than any other scale.

The Committee concurred with Friedenwald in hoping that the 1955 scale represents a closer approach to the truth and recommended its adoption, in full awareness of the possibility of further revisions as additional data are obtained.

Routine Tonometry. H. R. Hildreth and B. Becker. *American Journal of Ophthalmology*. Vol. 43, p. 21. January 1957.

Familiarizing all physicians with glaucoma, its incidence and its detection is one of the ultimate goals of case finding.

This report summarizes the attempted detection of unsuspected glaucoma in one private office in an 18-month period. Routine tonometry was performed on all refraction patients in the office of Dr. Hildreth. All patients with repeated borderline tensions were referred to the tonographic laboratory for evaluation and extensive studies. These were all routine asymptomatic refraction cases who would have been dismissed as having healthy eyes. All had open angles, normal discs, and full visual fields. No patients with established glaucoma, narrow angles, neoplastic, traumatic, or inflammatory diseases, and no postoperative eyes were included.

In the 18-month period 49 patients

out of approximately 2,000 routine refractions of persons over age 40 were found to fit the criteria of an entirely normal examination except for the borderline tension readings.

On these patients with borderline tensions an attempt was made to classify each eye into a glaucoma or normal category on the basis of pressure (P_o), facility (C), and response to water. It has been pointed out recently that eyes with an established diagnosis of glaucoma and field loss can be delineated sharply from the normal by the use of the ratio P_o/C .

The present series of patients provided an opportunity for further evaluating the significance of this ratio. On the basis of tonography and provocative tests, 69 (72 per cent) of the 97 eyes were classified as glaucoma suspects; and of the 69 eyes so diagnosed, 27 (39 per cent) developed early field loss during a six to 18-month follow-up.

The author concludes that routine tonometry in an ophthalmologist's office has proved to be a most valuable case-finding method for early glaucoma. Furthermore, the ratio P_o/C , especially following water-drinking, appears to be a reliable means for establishing the diagnosis of glaucoma.

Water-Drinking and Tonography in the Diagnosis of Glaucoma. B. Becker and R. E. Christensen. *A.M.A. Archives of Ophthalmology*. Vol. 56, p. 321. September 1956.

For the early detection of chronic simple glaucoma the authors find that tonography before and after water-drinking provides a more sensitive method than either test alone. Their study was based on 188 eyes proved glaucomatous by visual field tests, and 175 normal eyes.

Routine tonometry before water-drinking revealed an intraocular pressure of 24 mm. Hg or higher (1955 tables of Friedenwald) in 39 per cent of the glaucomatous eyes. This indicates that pressure alone is a poor criterion for the detection of glaucoma in proved cases. One hour after the drinking of a liter of water the pressure rose to 24 mm. Hg or more in 62 per cent of the glaucomatous eyes, but none of the normal eyes reached such a level.

After water-drinking, facility of outflow was reduced 10 per cent or more in 82 per cent of the glaucoma eyes, and in only 18 per cent of the normal eyes. The empirical ratio of intraocular pressure to outflow facility was 100 or more in 97 per cent of the glaucoma series and only 1 per cent in the normal series.

Uveitis in Association with Rheumatism. M. J. Hogan, S. J. Kimura and P. Thygeson. *A.M.A. Archives of Ophthalmology*. Vol. 57, p. 400. March 1957.

The occurrence of acute iritis of a recurrent type should always lead to investigation for evidence of associated joint disease.

Of the chronic diseases rheumatism ranks first in incidence, and it is second only to nervous and mental disorders as a cause of disability. Rheumatoid iritis occurs in two forms: acute recurrent, affecting one or both eyes; and chronic, affecting both eyes. The acute form responds rapidly to topical corticosteroid therapy. The chronic form, which occurs most often in the severer type of joint disease, does not respond to any type of treatment. Ocular involvement may precede onset by one to four years.

Still's disease (juvenile rheumatoid arthritis) frequently has an associated chronic bilateral iritis which persists in spite of treatment and leads to band keratopathy and cataract.

The etiology of Reiter's syndrome is still in doubt. Symptoms of this disease are conjunctivitis, urethritis and arthritis. Ocular lesions last two-four weeks, subside spontaneously.

Recurrent uveitis with mucocutaneous lesions was first recognized by Behcet. The uveitis is recurrent and bilateral, usually affecting one eye at a time. In the early stages inflammation is mild and transient, but as the condition develops the attacks become more violent and lead to progressive visual deterioration. A diffuse uveitis occurs, but the anterior segment seems to be principally affected. Vitreous opacities may be extensive. The attacks last two to three weeks and recurrences often take place at fairly fixed intervals. Isolation of a virus from the vitreous recently has been reported.

Toxoplasmic Uveitis: Treatment with Pyrimethamine and Sulfadiazine.

C. J. Burnham and V. A. Beuerman. *American Journal of Ophthalmology*, Vol. 42, p. 217. August 1956.

Although the toxoplasmic etiology of adult chorioretinitis is well established, there is little agreement on the criteria for diagnosis, which are presumptive at best. The present study concerns nine patients aged 12 to 27 years treated at the U. S. Naval Hospital in San Diego. All had careful clinical evaluation, and all had skin tests positive to toxoplasmin and negative for other evidence of granulomatous etiology. Some of the patients had the Sabin dye test, which was positive in all cases.

Since toxic reactions to Daraprim (pyrimethamine) have been reported, the patients were hospitalized when possible, and all were closely watched. Complete hemograms were done at least every other day during the intensive phase of therapy. None of the patients had severe toxic reactions from the drug.

The patients were started on Daraprim (25 mg. twice daily) and sulfadiazine (0.5 gm. from two to four times daily according to indications). Some were also given systemic cortisone. The period of treatment ranged from one month to 10 months, and some of the patients were still under treatment when this report was written.

Four patients showed rapid and marked improvement, and four others showed improvement varying from slight to marked over a longer period. One patient did not respond to therapy, and in retrospect his uveitis appears to have had a different etiology, though his toxoplasmin skin test was positive.

Combination Therapy of Retinoblastoma with Triethylene Melamine and Radiotherapy. G. Hyman and A. Reese. *Journal of the American Medical Association*. Vol. 162, p. 1369. December 8, 1956.

Retinoblastoma in 50 children between the ages of two months and seven years was treated at the Columbia-Presbyterian Medical Center with a combination of triethylene melamine and radiotherapy. Triethylene melamine, first given orally, is now being used in a new preparation for parenteral administration. Adequate preliminary study in all cases disclosed that no metastatic disease was present in the

patient selected for treatment. This consisted of ocular radiotherapy preceded either by oral use of the drug or by intramuscular and intra-arterial injection. Combined treatment resulted in an apparent arrest of retinoblastoma and retention of useful vision in 21 of 50 children.

Late hemorrhagic retinitis due to large dosages of radiotherapy alone, and sometimes resulting in blindness, has been successfully averted since the advent of this combined therapy.

Neisserian Conjunctivitis. J. R. Huntsman. *California Medicine*. Vol. 84, p. 339. May 1956.

The author feels that use of penicillin solution topically was more effective than the intramuscular injection of the antibiotic or a combination of both injection and instillation of sulfanilamide solution and penicillin ointment in treating Neisserian conjunctivitis.

Different therapeutic regimens were used in a series of 45 cases. Seven patients received a combination of intramuscular penicillin and irrigation with a sulfanilamide solution. Two of these showed progressive disease after treatment. Sixteen other patients received penicillin intramuscularly and local instillation of penicillin solution. Every one of these showed favorable progress. One patient received penicillin intramuscularly plus penicillin ointment, but this therapy failed. Twenty-four others, including all those on whom other therapy had failed, received penicillin instillation and this group showed no failures on this specific therapy.

Even when only one eye was involved, treatment was initially given to both eyes; the unaffected eye was

covered with a shield to prevent further infection. A solution of penicillin in saline with addition of epinephrine was used. For cleansing a plain saline solution or other non-irritating irrigant is recommended.

No instances of sensitivity to penicillin were noted and no permanent defect after completed treatment.

Problems in the Treatment of Burns of the Conjunctiva and Cornea Caused by Chemical Agents and Heat. A. Pillat. *Eye Digest*, Vol. 1, p. 3. June 1956.

It is essential to start the treatment of chemical burns within the first moment after the accident, with copious irrigation of the eye. Solid corrosives, particularly lime, should then be removed from the conjunctival sac. Since a doctor is seldom at hand, lay personnel should be trained to administer first aid, and the proper drugs and quantities of liquid for irrigation should always be at hand where chemicals are being used.

Second and third degree burns must be treated in hospital. The transplantation of mucosal membrane by Denig's method has been usual in these severe cases, and in the author's opinion should be performed immediately after the injury, if it is to be effective.

In the First Eye Clinic, Vienna, the treatment of choice is sympatol (oxyphenylmethyaminoethanol-tartrate), synephrine, neosynephrine or corvasymptom. Sympatol, instilled every 15 minutes for six hours, and then at longer intervals, has proved so effective that for the last four years Denig's transplantation therapy has proved unnecessary. In most cases it has been possible to avoid symbleph-

aron and destruction of the cornea and in lighter cases to achieve a slighter scar on the cornea than with other therapies. Evidently sympatol supplies protein to the injured tissue, and arrests the process of the burn.

The Management of the Red Eye in General Practice. F. W. Newell. *Journal of the Louisiana State Medical Society*, Vol. 108, p. 211. June 1956.

Red eye may occur in a variety of conditions ranging from a self-limited catarrhal conjunctivitis to an acute glaucoma which can cause blindness within a few hours. It is most important for the general practitioner to distinguish quickly between minor and vision-destroying processes, especially between conjunctival injection and deep ciliary injection which occurs in iritis, glaucoma and corneal inflammation.

Dangerous conditions are indicated by a blurred pattern of the iris, irregular pupillary margins, sluggish or absent reaction of the pupils to light, and reduced vision. Vision is never affected in superficial conditions.

Indications and treatment are described for sty, chalazion, blepharitis, and bacterial conjunctivitis. A surprising number of patients present themselves with a sub-conjunctival hemorrhage which has usually occurred spontaneously. While this is not important to the eye itself it may be a sign of serious organic disease. The removal of a foreign body is discussed in detail. Virus inflammations of the cornea are becoming increasingly serious, and the general practitioner is warned against using cortisone or its derivatives in these cases.

If angle closure glaucoma or acute iritis is recognized with certainty, the

physician should use Diamox and atropine respectively before the patient is rushed to a specialist.

Macular Cysts: A Dominantly Inherited Affection with a Progressive Course. A. Sorsby, M. Savory, J. B. Davey and R. J. Leslie Fraser. *British Journal of Ophthalmology*, Vol. 40, p. 144. March 1956.

Bilateral macular cysts were found to be dominantly inherited in two families observed over three generations and in three families observed for two generations. The inheritance was regularly dominant in three families and irregularly dominant in two. The course of the disease is slow and at first largely innocuous, but eventually destroys central vision.

The present study adds another clinical entity to the major central fundus lesions. Of these six or seven affections macular coloboma and probably macular cysts are congenital, and Best's disease, if it is a separate entity, is possibly congenital.

Eye disturbances such as blurring of vision and color blindness appear from childhood to middle age, and are apparently determined by rupture of the cyst. There follow slow pigmentary degenerative changes, and the anterior wall of the cyst is gradually absorbed. Toward the seventh decade of life a non-pathognomonic macular lesion is found, and the cystic character of the affection is no longer obvious.

Blindness in Hawaii. A Report on All Registered Blind to December 31, 1955. F. J. Pinkerton. *Hawaii Medical Journal*, Vol. 16, p. 136. November-December 1956.

In 1935 the Territory of Hawaii organized a Bureau of Sight Conserva-

tion and Work with the Blind. This bureau has functioned as a coordinator for volunteer agencies interested in the blind and has worked directly with every phase of the problem, including prevention.

In the period from November 1, 1935 to December 31, 1955, the bureau registered 1,677 persons in the Territory of Hawaii as blind, on the basis of ophthalmologists' reports. The total civilian population was 500,976 as of July, 1955; the number of living registered blind was 710 on December 31, 1955.

Today the eye health picture in Hawaii is far better than it was two decades ago when groups were ruled by superstitions which forbade medical care.

Of the total population about 18.8 per cent are Hawaiian; 6.44 per cent Chinese; 36.9 per cent Japanese; and 34.6 per cent others.

The leading causes of blindness are: cataract, 27 per cent; optic nerve atrophy, 9.7 per cent; glaucoma, 6 per cent; and trauma, 7.39 per cent.

Recent Advances in Ocular Surgery. Transactions, Combined Meeting, January 16, 1956, New York Academy of Medicine, Section of Ophthalmology and New York Society of Clinical Ophthalmology. *A.M.A. Archives of Ophthalmology*, Vol. 57, p. 134. January 1957.

The discussion at this joint meeting was led by a panel of four: Milton L. Berliner, John Gipner, R. Townley Paton and Harold G. Scheie, with Maynard C. Wheeler as chairman.

Scleral Shortening for Detached Retina. Dr. Berliner expressed the opinion that the 30 to 35 per cent of failures in the classic diathermy operation is re-

lated to the age or duration of the detachment, and to the method of treatment. Duration of detachment has not always received the attention it deserves; the condition may have existed for several months, resulting in changes in the separated retina and vitreous.

Over-treating with diathermy may create new breaks and produce retinal and vitreous alterations. In these cases with release of the subretinal fluid, the retina cannot get back to the choroid. Shortening the sclera is the only hope. Dr. Berliner believes that lamellar scleral resection is the best procedure, since an extensive area can be treated without excessive damage, and it is possible to obtain a good choroidal roll.

Cataract Surgery. Dr. Gipner reported as the most important recent advances: (1) The cosmetic and functional improvement resulting from round-pupil intracapsular extractions; (2) procedures which have increased safety, such as adequate sedation before operation, extraocular muscle immobilization and lid akinesia; (3) production of a soft eye by retrobulbar muscle cone injection and (4) use of corneoscleral sutures, which permit monocular dressing and early mobilization of the patient.

Dr. Scheie said that the introduction of Thorazine as a preoperative quieting drug is one of the most important recent advances.

Dr. Gipner reported that modern linear extractions for soft congenital cataract are replacing older operations, such as multiple needlings.

Keratoplasty. Education of the public, Dr. Paton stated, constitutes an important advance. The surgeon now finds it easier to deal with the patient because the latter does not expect

miracles. There has been improvement in surgical technique, in instruments and their application. Success has increased with earlier operation, and much improvement has been made in selection of cases.

Emergency transplant in accident cases presents a new field of investigation. Use of annular or ring-segment grafts in marginal corneal dystrophies is a recent development. Cortisone and Diamox are of tremendous value. Knowledge of donor material has increased; with newer methods of freezing it may be kept several weeks.

Glaucoma Surgery. Diagnosis of chronic simple glaucoma is no longer an indication for operation, Dr. Scheie reported. Two prime indications are: tension fairly constant at 35 mm. Hg or more; or loss of field. Recent review of glaucoma records revealed several cases of bilateral glaucoma of equal severity in both eyes in which only one eye had been operated on years previously. The eye that had been operated on was all too often lost, blind or with poor vision from cataractous changes, while the fellow eye that had been treated medically had suffered no loss of vision. It is advisable to operate only when true indications exist. Dr. Scheie's operation of choice is iridencleisis; trephinations on eyes with wide angles are sometimes done.

Early operation of juvenile glaucoma is advisable; in these cases the chance of preserving vision throughout life is slight.

Either goniotomy or goniopuncture can effectively control ocular tension in infantile glaucoma. Dr. Scheie often combines the two procedures, doing a goniopuncture after completing the sweep of the knife for the goniotomy.

Darf Penicillin fuer die gesetzliche Blennorrhoe prophylaxe empfohlen werden? (Can Penicillin be recommended for the legally prescribed Blennorrhea Prophylaxis?) E. Walch. *Muenchner Med. Wochenschrift*. 97: 114-116, 1955.

Kritisches zur Penicillin Blennorrhoe prophylaxe der Neugeborenen. (Criticism of Penicillin in the Prevention of Blennorrhea Neonatorum.) K. W. Schultze and A. Hartmann. *Deutsche Med. Wochenschrift*. Vol. 79, p. 1631, 1954.

Is Credé's Blennorrhoeic Prophylaxis still Justified? K. Zimmer and R. Kremser. *Geburtshilfe und Frauenhilfe*. Vol. 15, p. 628, 1955.

The discovery of penicillin and the regression of gonorrheic disease due to the antibiotic has raised a question as to further use of Credé's prophylaxis for the eyes of the newborn.

The silver nitrate solution that is being used in Credé's prophylaxis has not lost its usefulness in 70 years. Even with careful application however, it has caused reactions, sometimes as high as 20 per cent. Since the instillation of penicillin was found to cause less irritation and also seemed to have good effect a change in prevailing prophylaxis laws was considered.

A study was conducted recently at the Tuebinger Hospital (Germany) on 8,072 newborn, in five of whom there was a known history of maternal gonorrhea. Physicians were unable to control blennorrhea in four of these five cases with the use of silver nitrate; also there was a 20-30 per cent reaction to the drug.

The use of penicillin in oil in 1,650 other babies resulted in only 13 per cent allergic reaction and no blennor-

rhea. On microscopic examination of smears from the eyes, however, a much larger number of bacteria was noted than on those taken from eyes treated with silver nitrate.

In still another study 644 children born in 1954 received no prophylaxis. In spite of this not a single case of blennorrhea was noted.

The opinion that the gonococcus has only slight resistance to penicillin has been questioned by all researchers. Emphasis is placed on administration of sufficient dosages of the drug.

Penicillin is of great value in the treatment of serious diseases and should be used only under such circumstances.

The authors of these three articles agree that the use of silver nitrate should be continued. Credé's method is not ideal; it appears to need improvement, but a change to penicillin as the agent for prophylaxis does not now seem advisable.

Classroom Symptoms of Visual Difficulty. Gertrude E. Knox. *Clinical Studies in Reading, II*. Edited by Helen M. Robinson. Supplementary Educational Monograph No. 77, University of Chicago Press. 97 p. January 1953.

A search of the literature showed that 94 symptoms and signs of eye problems had been listed by various authors. By eliminating the more generalized kind the list was reduced to 30 symptoms. This list was checked on 126 children in five third-grade classrooms of a suburban school, and also on 27 unselected pupils from grades one, two and four on whom professional eye examinations had been done in the same school.

The most frequently observed symptoms that seemed referable to

the actual need for eye care were: facial contortions; holds book close to face; tense during close work; tilts head; thrusts head forward; holds body tense while looking at distant objects; assumes poor sitting position; excessive head movements while reading; rubs eyes often; avoids as much close work as possible; has tendency to lose place in reading. The remaining symptoms did not appear to be discriminative.

Of seven students whom a refractionist identified as being in need of visual care six were identified by observation and five by vision screening tests. It was especially significant that all seven were identified by combining observation with vision screening.

Vision and Hearing Screening Program in Prince George's County, Maryland. Mary A. Thompson. *American Journal of Public Health*. Vol. 47, p. 200. February 1957.

The author, who is supervisor of health education and health service for the Board of Education in Prince George's County, describes the methods used to make a perfunctory screening program over into an influential health educational activity.

Women who prefer part-time jobs because they have family responsibilities have been trained in the use of the audiometer and the Massachusetts Vision Test. They work as technicians a minimum of three days a week on a per diem basis, are paid \$10.00 a day, and 7 cents a mile for travel. Currently 11 such technicians are employed; seven do both vision and hearing, two vision only, and two hearing only.

Prince George's County Medical Society has secured the services of an

otologist and an ophthalmologist as medical consultants to the program.

The procedure is set up so that the technicians can work at a leisurely pace; emphasis is placed upon quality of screening. Sometimes they give several retests immediately. The parent is not notified until after a two- or three-week interval, permitting retesting of the children who deviate from normal. Frequently parents are invited to watch their children being screened and to be screened themselves. This helps to motivate taking children to the doctor when necessary.

Grades 2, 5, 8, and 11 are screened routinely. Teachers may refer children in any other grade for testing.

During the school year 1955-1956 under the vision program 14,204 children were screened; 1,085 of them were found to need attention; 250 were referred to doctors.

The public health nurse is believed to be the biggest factor in achieving follow-up for a large number.

INJURIES IN U. S. WARS

Modern warfare is becoming increasingly dangerous to the eyes, said Colonel Austin Lowrey, Jr. in a paper presented in the post-graduate course in ophthalmology at Walter Reed Army Medical Center, Washington, D. C. Civil War records show 1,190 eye casualties, 0.5 per cent of the total. The percentage went up to 2 for the Spanish American and two world wars, and then in the Korean war rose sharply to 7.7 per cent, a total of 8,000 ocular injuries, four-fifths of them due to trauma. World War II involved nearly 12,000 eye casualties, resulting in blindness for 1,500 men. In 300 cases ocular damage was due to methyl alcohol sold to the men in drinks, and an equal number were blinded by nutritional amblyopia after living on starvation diets as prisoners of war.

BOOKS AND PAMPHLETS

AN ATLAS OF DISEASES OF THE EYE. E. S. Perkins and Peter Hansell. Little, Brown & Company, Boston, Mass. 1957. 92 p. \$10.00.

In a foreword to this text Sir Stewart Duke-Elder points out that in most medical schools the study of diseases of the eye receives far less attention than it deserves. For the general practitioner this is unfortunate since the importance of recognizing ocular conditions in his practice is often crucial. To the specialist in many fields an understanding of vascular and other changes as seen in the eye is frequently of immense value in diagnosis and prognosis.

In this atlas the pictorial representation of pathological conditions, supplemented by text, is presented as "the best substitute for the patient himself." Color photography and drawing have been employed for the unusually clear illustrations. The reproduction is of outstanding quality. Text and pictures deal with diseases of the lids and orbit; conjunctiva and cornea; uveal tract and lens; and the fundus in systemic and local disease.

E. S. Perkins is a reader in ophthalmology and Peter Hansell is director, departments of illustration and photography, at the Institute of Ophthalmology, University of London.

CHILDREN'S EYE PROBLEMS. Emanuel Krinsky, M.D. Grune and Stratton, New York. 1956. 176 p. \$6.00.

The pediatrician and the general practitioner will find this book a practical, useful guide to the understanding of children's eye problems. The

management of such complaints differs in several ways from that in adults. Greater reliance is placed on objective examination, since a parent's story may be unfounded, or the child may be uncooperative.

Dr. Krinsky aims also to present to the ophthalmologist or other specialist a plan for dealing with the child as a whole by emphasizing environmental, psychologic, hereditary and systemic influences.

The subjects discussed, and very effectively illustrated, include the eye and its development; examining the child; eye disorders of local and systemic origin; and problems in management.

THE EARLY DETECTION AND PREVENTION OF DISEASE. Edited by John P. Hubbard, M.D. Blakiston Division, McGraw-Hill Book Co., New York. 1957. 350 p. \$7.50.

This book is based on a series of symposia arranged for one of the postgraduate courses of the American College of Physicians. The contributors are 28 well-known clinicians who discuss the relation of preventive medicine to the clinical practice of medicine.

Sections of the text deal with preventive medicine and cardiovascular and gastrointestinal systems; early detection and prevention of selected diseases such as lung cancer, tuberculosis and rheumatic fever; deviation from the norms of mental health; measurement of the health of the musculoskeletal system; a review of immunization; and preventive medicine in the armed services.

GLAUCOMA: TRANSACTIONS OF THE FIRST CONFERENCE, DECEMBER 5, 6 AND 7, 1955.

The Josiah Macy, Jr. Foundation.
Frank W. Newell, Editor. Madison
Printing Company, Inc., Madison,
N. J. 1956. 251 p. \$4.50.

At this first Macy conference on glaucoma the subjects of angle-closure glaucoma, central control of intraocular pressure, and of physiologic and pharmacologic factors influencing the resistance to aqueous outflow were discussed by 13 outstanding ophthalmologists, two psychiatrists, two internists, a cytologist and a biophysicist-biochemist.

Some of the eye physicians have studied glaucoma almost entirely in its clinical aspects, others through laboratory research. To one familiar with the problem the discussion is fascinating and most stimulating. To those not well versed in the concepts discussed it probably is frustrating to find the discussion of an idea started, interrupted several times by tangential comments, and resumed several pages later. Had the kind of brief summary at the end of the discussion on angle-closure glaucoma been made at the end of the other discussions, the casual reader would find the report of much greater value.

Those interested in an eye disease affecting more than a million Americans will want to have this volume.

TRANSACTIONS OF THE AMERICAN OPHTHALMOLOGICAL SOCIETY. Vol. 54. 1956.
Columbia University Press, New
York. 1957. 826 p. \$18.00.

This volume continues the high standards that we have become accustomed to expect from the Transactions of the American Ophthalmological Society. There are so many papers of

great interest to persons in the field of prevention of blindness that it is difficult to select any for particular mention. However, the paper of H. R. Hildreth, M.D., and Bernard Becker, M.D., on "Routine Tonometry" is a must for all who are concerned about the early detection of chronic simple glaucoma. The thesis by Ralph W. Danielson, M.D., on "The Relationship of Fields of Vision to Safety in Driving, with a Report of 680 Drivers Examined by Various Screening Methods" and the thesis by Arthur H. Keeney, M.D., on "Lens Materials and the Prevention of Eye Injuries" will be essential information for a long time to come for those interested in accident prevention.

TRANSACTIONS OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM. Vol. LXXVI. Session 1956. J. A. Churchill, Ltd., London. 1956. 772 p.

A substantial section of these proceedings is devoted to discussions of glaucoma, including papers on early diagnosis by Sir Stewart Duke-Elder, P. L. Blaxter, S. J. H. Miller and G. P. Sourdille. The volume is also of great value because it lists the members of the Society of the United Kingdom as well as the affiliated organizations.

HEALTH AND FITNESS. Third Edition. F. L. Meredith, Leslie W. Irwin and Wesley M. Staton. D. C. Heath and Company, Boston. 450 p. 1957. \$4.20.

That teaching health in secondary schools need not be a dry-as-dust subject is shown by this largely rewritten and reorganized text. Anatomical plates, photographs and clever line

drawings add greatly to the attractiveness of this edition. A chapter of 12 pages provides excellent background for an understanding of recommendations made for vision conservation and for maximum utilization of eyesight. Helpful study guides are provided at the end of each chapter.

BLAKISTON'S NEW GOULD MEDICAL DICTIONARY. Second Edition, Edited by Normand L. Hoerr, M.D., and Arthur Osol, Ph.D. Blakiston Division, McGraw-Hill Book Co., New York. 1956. 1,464 p. \$11.50.

A marked increase in size over the first edition of this well-known dictionary reflects the recent advances in medicine and allied fields. The editors state that with the cooperation of an editorial board and 88 contributors from specialized fields a complete revision has been prepared, including 12,000 new terms, 8,000 changes, and modernized spellings and usages. Among the additions are new words from nuclear science, "space medicine," new antiarthritic compounds, cancer and tumor terms, and a number of tables, including one on isotopes. The excellent color and black-and-white illustrations are grouped in one section for handy reference.

SCHOOL NURSING SERVICES. Department of Public Health Nursing, National League for Nursing, New York, 1956. 60 p. \$1.00.

Changing concepts of the function of the school nurse are reflected in this epitomized report of a national conference of experts in various fields of health and education held in Minneapolis in October 1955. The conference was called together for the express purpose of discussing the transforma-

tion in school health programs during recent years. Part of this change has been brought about by the contributions of health educators, psychologists, guidance workers and others to child health problems. A new orientation of the school nurse is involved, and this little book offers much useful material not only to the nurse but to all who are interested in health education and services in the school.

GUIDES TO ACTION ON CHRONIC ILLNESS. National Health Council, New York, 1956. 88 p. \$1.00.

The need for all-out community action to deal with the problems of chronic illness is the theme of this condensed report of the 1956 National Health Forum. Pioneers of some of the community programs already launched in various parts of the country describe their experiences in organizing broad cooperative action to meet local needs.

CITIZEN PARTICIPATION IN PUBLIC WELFARE PROGRAMS. Evalyn G. Weller and Elizabeth B. Kilborne. U. S. Department of Health, Education and Welfare, 1956. U. S. Government Printing Office, Washington 25, D. C. 46 p. 20 cents.

The increasing value of volunteer services in public welfare programs led to the preparation of this handbook by the Bureau of Public Assistance of the U. S. Department of Health, Education and Welfare. It offers general advice on the recruitment, training and supervision of volunteers, along with illustrative material and a list of films and recordings which the Bureau lends without charge.

The authors believe there is need to strengthen and enrich the supplementary services which state and local

agencies give to those receiving public aid. Such volunteer services as clubs and leisure programs for the aged and recreation for children in institutions have in many communities become an integral part of public welfare agencies. This booklet provides a useful guide in over-all program planning in which citizens may be assigned definite roles.

SAFETY EDUCATION. A. E. Florio, Ed.D., and G. T. Stafford, Ed.D. McGraw-Hill Book Co., New York. 1956. 328 p. \$5.50.

Safe living does not require freedom from all potentially hazardous conditions, but rather the ability to function at optimum level in the presence of necessary hazards. This is the principle on which the safety education curriculum in the modern school is based. Although the teaching of safety is relatively new, its value has been demonstrated in a marked reduction in traffic accidents among elementary school children and a lower incidence of motor-vehicle accidents among high school students who have completed driver education courses. Accidents remain, however, the foremost cause of death among children of school age, accounting for many more fatalities than any single disease. Home and traffic accidents head the list.

The authors emphasize that no safety program can have any appreciable effect on the over-all accident rate if it concentrates on only one or two activities; but if safety education is provided in all areas, the principles and procedures taught in each will contribute to the development of a general safety consciousness.

The inclusion of safety education in public school curricula is required by

law in 16 states and strongly recommended by nearly half of the state boards of education. Unfortunately corresponding attention has not been given to training teachers in this field, so that few are qualified.

This text is designed for use in such training courses. The authors, who have had long experience in teaching safety education at the University of Illinois, state their purpose as three-fold: to give the prospective teacher up-to-date information on the safety needs of students, parents, and the community; to suggest the teaching principles and procedures that can be applied to meet these needs; and to furnish concrete material that can be utilized in the various areas of safety education. The first section of the book deals with scope and methods; the second with the areas of safety: pedestrian, bicycle, driver, home, farm, fire, vocational; and safety in physical education.

REHABILITATION LITERATURE 1950-1955.

Earl C. Graham and Marjorie M. Mullen. McGraw-Hill Book Company, New York, 1956. 573 p. \$13.00.

The compilers of this extensive bibliography are the librarian and assistant librarian of the National Society for Crippled Children and Adults, and they have done a professional job of covering recent literature on the handicapped. Books, pamphlets and articles are briefly described and grouped according to the mental or physical handicap. Unstinted cross-references add to the utility of this volume.

Visual defects titles are found under the headings "Blind" and "Partially Sighted" which are divided into vari-

ous sections such as etiology, employment, special education and statistics. A broad view of rehabilitation is given, with medical, social and general descriptive entries included.

HOW TO ENJOY GOOD HEALTH. Cyril Solomon, M.D. and Brooks Roberts, editors. Random House, New York, 1956. 240 p. \$3.95.

A good deal of sound advice on common health problems is offered in this compilation of 67 articles, most of which originally appeared in *This Week Magazine*. The authors are outstanding physicians from many fields of medicine.

These contributions to preventive medicine are brief and simply written, but manage to pack in much information. William L. Benedict, M.D., under the title, "Save Your Eyes," urges preschool and periodic vision tests, describes proper lighting for reading and television, and warns against eye hazards and fads, from eye exercises to tinted glasses. Franklin M. Foote, M.D., contributes an article, "Check Your Family's Eyes," which explains the symptoms of hyperopia, myopia and glaucoma, and describes rough tests for central and side vision and binocularity which the family may make on themselves. Any difficulty in passing these tests, he writes, should be the occasion for a professional eye examination.

ORGANIZATION OF THE FEDERAL GOVERNMENT FOR SCIENTIFIC ACTIVITIES. National Science Foundation. U. S. Government Printing Office, Washington 25, D. C. 1956. 339 p. \$1.75.

Some idea of the tremendous scope and variety of federal government efforts in scientific research can be

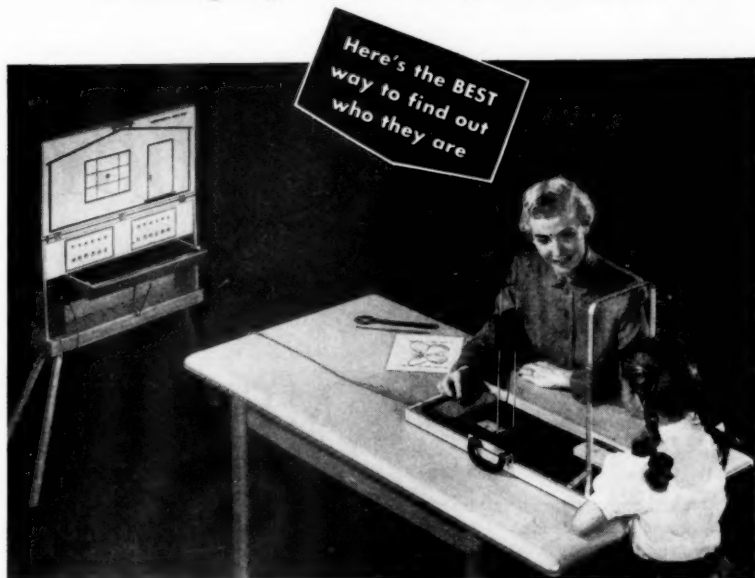
gained from this skeletonized report by the National Science Foundation, itself an agency of government. A large volume is required merely to list and characterize the hundreds of agencies under 38 departments which are carrying on basic, applied and developmental research into every conceivable scientific problem of national concern.

Much of this activity is of significance to eye research. The Office of Naval Research, in its biological and psychological sciences divisions, and the ocular research unit of the Army Medical Service have already contributed to the common fund of ophthalmic knowledge. The National Institute of Neurological Diseases and Blindness, whose important services are summarized in a brief paragraph of this report, is truly national in scope. Of growing importance in the medical field are the basic researches of the Atomic Energy Commission's divisions studying the biological effects of radiation and the use of radioactive materials in medicine.

YELLOW URGED FOR HUNTERS

Red is not a safe color for hunters to wear, since color-deficient persons cannot distinguish it from foliage or shadows. This is one finding of a series of field tests being made in California by the state Department of Fish and Game, the California Optometric Association and the National Rifle Association. In this state alone at least 48,000 hunters are color-blind or color-defective, with the red-green type the usual defect. Both normal and color-deficient persons see yellow and golden-yellow most clearly, the preliminary tests indicate. Field tests in every sort of terrain will continue to investigate visual factors in hunting safety.

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